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1971 ANNUAL REPORT

National Plant Materials Center



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U.S. DEPT. OF AGRICULTURE

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
BELTSVILLE, MARYLAND

United States Department of Agriculture
Soil Conservation Service
National Plant Materials Center
Beltsville, Maryland

1971 ANNUAL REPORT

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United States Department of Agriculture
Soil Conservation Service
National Plant Materials Center
Beltsville, Maryland

PERSONNEL

H. W. Everett.....Manager
Gary V. Schultz.....Soil Conservationist
John A. Dickerson.....Soil Conservationist
Richard C. Russell.....Biological Technician
William T. Barnes.....Nursery Worker
Eugene O. Jones (WAE).....Nursery Worker
Roger Steward (WAE).....Nursery Worker
Helen M. Chamberlin.....Clerk-Stenographer
Taffeta L. Chroniger.....Secretary-Typist

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United States Department of Agriculture
Soil Conservation Service
National Plant Materials Center
Beltsville, Maryland

INTRODUCTION

This report covers the major operations of the National Plant Materials Center for the calendar year 1971. The operations reported herein were directly applied to the functions of:

1. Seed and plant assembly from world-wide sources for the SCS plant materials program.
2. Initial increase of assembled material.
3. Exchange of conservation plant materials with other countries.
4. Verification of plant material identities.

In addition, work was carried out pursuant to the co-operative agreement between the Maryland State Highway Administration and the SCS National Plant Materials Center.

Assembly and distribution of plant materials occupied a large portion of time with 2,143 new accessions acquired and 1,194 accessions sent out. SCS Plant Materials Centers received 595 packets of seed, other agencies (including universities) received 335 packets, and foreign countries were sent 264 packets of seed.

A reidentification summary of plant materials in the SCS program is included in this report.

1971 Activities

The National Plant Materials Center again participated in the National Lawn and Garden Week Show during March. Urban conservation plants were displayed and seemed to attract considerable interest from the viewers. Shore juniper received the most comment, but the blooming crabapple, ajuga, liriope, cotoneaster, hawthorne and sedum attracted much attention from the visitors.

H. W. Everett and G. V. Schultz completed courses at the University of Maryland to upgrade plant materials related knowledge and ability.

Mr. John A. Dickerson transferred to the NPMC as a Soil Conservationist in March. He was a forester in the Elkins, West Virginia District. His background includes work in forestry and hydrology.

The valuable assistance of Mrs. Helen M. Chamberlin, Clerk-stenographer was lost to the NPMC through her retirement. We are sure that retirement has meant an increase in civic-minded activity for Helen, and we all wish her the best that retirement can offer.

Mrs. Taffeta L. Chroniger transferred to the NPMC as Clerk-typist from GSA where she had 3 years previous service. Taffy is learning the new procedures rapidly and doing a good job.

In June 1971 Mr. Everett attended the International Seed Testing Association Meeting in Washington, D.C.

The S-9 Regional Committee Meeting participants reviewed the operations and plantings of the NPMC in July.

The July issue of Weeds, Trees and Turf presented a reprint of information on direct seeding woody plants; work being carried out under the cooperative agreement with the Maryland State Highway Administration.

During September and October, Nursery workers William T. Barnes and Roger Steward voluntarily terminated employment at the NPMC. Eugene Jones (WAE) accepted full time teaching duties on the Eastern Shore of Maryland.

In October the NPMC hosted the Northeast Allocation Meeting.

CLIMATOLOGICAL SUMMARY*

The National Plant Materials Center has a humid, continental-type climate, primarily due to the typical west to east atmospheric flow and 43 inches average annual rainfall. Summer weather is dominated by large masses of warm, moist air spreading northward from the south and southwest. The winter weather is rapidly changed from day to day by alternating high and low pressure systems in the west - east flow.

Temperatures of 90°F or higher occur 40 days per year on the average and 32°F or lower occurs on 119 days per year. The average annual precipitation of 43 inches is evenly distributed in a typical year. Summer rainfall of significance is generally from thunderstorms or the occasional tropical storm or hurricane that affects the weather.

The growing season averages 162 days with 50 percent probability that it will begin April 29 and end on October 9.

*Extracted from summary by W. J. Moyer, NOAA Climatologist of data taken at the Bell Weather Station, Glenn Dale, Maryland.

WEATHER DATA

1971

National Plant Materials Center
Beltsville, Maryland

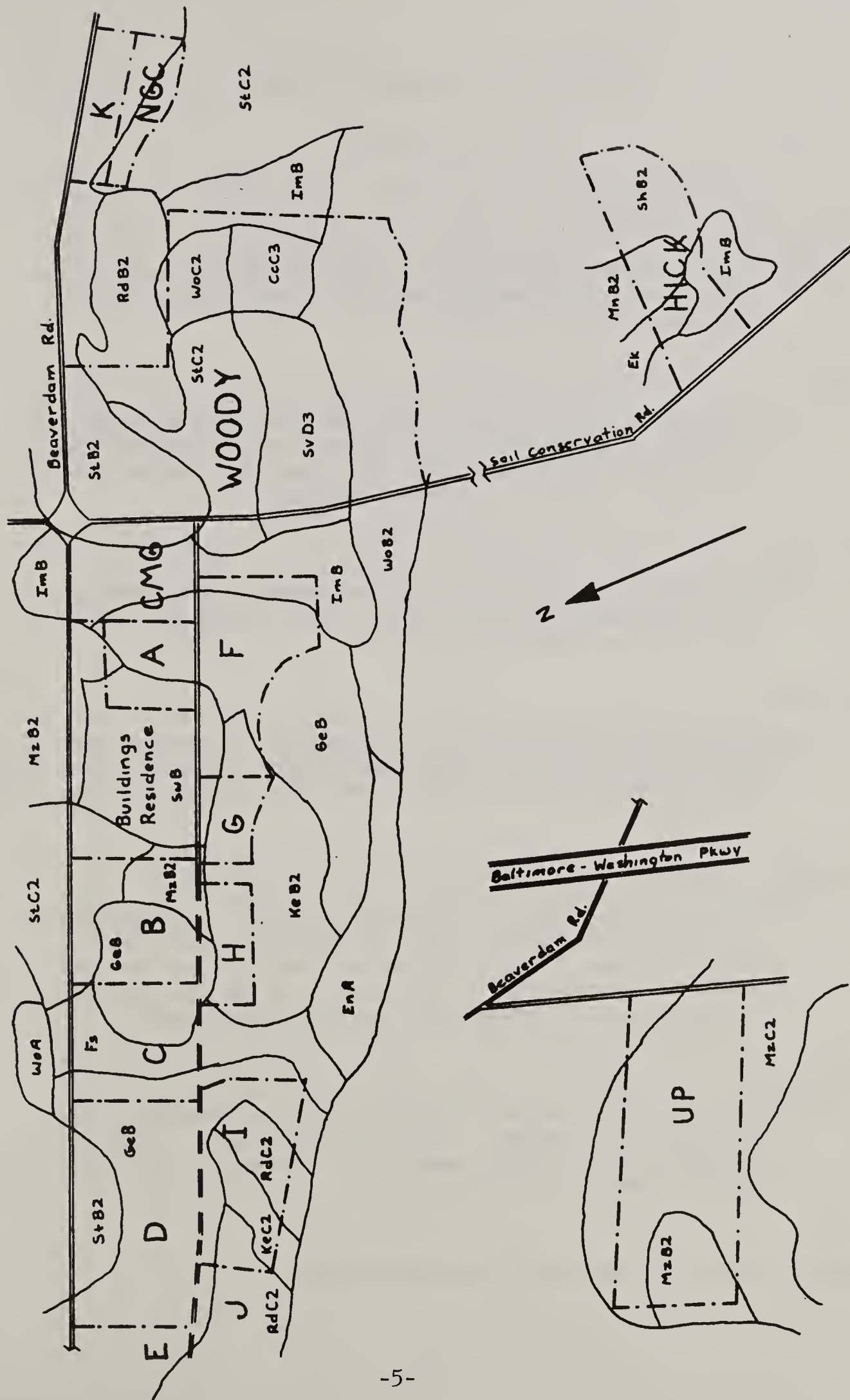
Temperature - °F								Average
			Mean	Mean	Difference 1971	Difference 1971	Total	Total
	Low	High	Low	High	Mean Low From	Mean High From	Precipitation	Precipitation
					12 Year	12 Year		
					Average	Average		
January	8	50	18.6	37.3	-4.0	+5.9	1.08	2.82
February	5	70	25.4	45.9	+1.0	-0.1	5.59	2.62
March	20	71	27.1	50.3	-2.5	-0.8	2.22	3.72
April	27	82	35.9	64.2	+5.8	-1.8	2.64	3.19
May	34	88	47.3	70.8	-2.4	-3.3	7.59	3.97
June	50	91	60.6	83.0	+2.3	+1.0	2.95	4.09
July	51	92	62.3	85.0	-1.4	-2.5	5.05	4.50
August	48	91	62.0	83.3	-0.3	-1.6	8.51	4.86
September	42	88	59.6	78.0	+4.8	-1.3	6.07	3.32
October	39	80	51.8	70.3	+8.8	+2.2	5.13	3.04
November	21	80	34.6	53.9	+2.6	-2.2	4.01	3.20
December	10	70	32.4	50.7	+8.6	+5.3	1.82	3.25
Yearly					+1.9	+ fractional	52.66	42.58

The weather during the 1971 growing season was on the average 1 or 2 degrees cooler than normal. Rainfall was well above average, but the table does not reveal a dry period of 27 days in July in which only 1.38 inches of rain fell - all as brief showers. Irrigation of selected areas was required. The latter half of June was also dry.

The warm nights of fall and winter permitted the growing season to extend until November 5, almost a month past the usual October 9 date.

Data furnished by: Nutritional Management Investigations
Dairy Cattle Research Branch, ARS

Soils and Field Boundaries - National Plant Materials Center



National Plant Materials Center

Soils Descriptions*

Cristiana

Clay (CcC3) - well drained soils, clayey throughout; most of the surface soil lost through erosion. Capability unit IVe-3. Moderate to strong acidity.

Elkton

Silt loam (Ek) - poorly drained silt loam over clay or silty clay. Drainage is a major problem. Capability unit IIIw-9. Strong to extreme acidity; the water table near the surface much of the year. Suitable for crops if drained.

Elsinboro

Sandy loam (EnA) - sand dominant in the surface layer. Well suited to general crops and deep-rooted crops. Capability unit I-5. High moisture holding capacity.

Fallsington

Sandy loam (Fs) - poorly drained loams and sandy loams. Capability unit IIIw-6. Strongly to extremely acid with moderate moisture holding capacity and moderate fertility. Suitable for farm uses if drained.

Galestown - Evesboro

Loamy sands (GeB) - coarse, loose and droughty. Severely limited for farming; protection from wind erosion is necessary. Capability unit IVs-1. Low natural fertility and extreme acidity. Suitable for deep-rooted crops and for shallow-rooted plants if irrigation is supplied when needed.

Iuka

Sandy loam (ImB) - moderately well drained, some drainage aids necessary for cropping. Capability unit IIw-7. Moderate to high moisture - holding capability. Strongly to extremely acid. Suitable for general farm crops.

*Refer to preceeding soils and field boundary map.

Soils Description - 1971

Keyport

Fine sandy loam (DeB2, KeC2) - moderately well drained sandy, silty, and silty clay loams. Erosion rather than drainage is the prime consideration. Capability units IIe-36 and IIIe-36. Strongly acid, natural fertility medium to low. Well suited to some farm crops when managed.

Matapeake

Silt loam (MnB2) - well drained. Suitable for most crops including tobacco. Capability unit IIe-4. High moisture holding capacity and good natural fertility.

Muirkirk

Loamy sand (MzB2, MzC2) - erosion hazard from the thick sandy surface layer. Capability units IIs-5 and IIIe-5. Rapidly permeable, medium to strongly acid, moderate in fertility. Suited to deep-rooted crops only unless irrigated.

Rumford

Loam sand (RdB2, RdC2) - medium and coarse sand moderate to dominant in the surface layer. Low in moisture and plant nutrients, but high-quality crops can be produced if managed properly. Capability units IIs-4 and IIIe-33. Excessively drained, acid.

Sandy and clayey land (ScB, ScC) - suitable for undemanding farm crops on rotation with long-term pasture or woodland. Dominant sand in the surface layer. Capability units IIIe-41 and IVe-5. Medium to extreme acidity, fertility low to high.

Sassafras

Sandy loam (ShB2) - moisture holding capacity is good except for prolonged drought. Erosion is likely unless good farm practices are followed, suited to most crops. Capability unit IIe-5. Acid, productive under fertilization. Suitable for most crops.

Soils Description - 1971

Sunnyside

Fine sandy loam (StB2, StC2) - moderate risk of erosion, droughty only during long dry periods. Suited to most crops. Capability units IIe-5 and IIIe-5. Acid, require fertilizer for good crops.

Sandy clay loam (SvD3) - severely eroded if unprotected. Suitable for hay or pasturage only, or woodland. Capability units VIe-2. Well drained, strong to extreme acidity.

Loam (SuC2) - moderately eroded. Suited to general crops and medium quality tobacco. Capability unit IIIe-4. Deep, well drained, medium to strong acidity. Moderate to high natural fertility.

Urban land (SwB) - disturbed land with no capability unit assigned. Variable potential and productivity.

Woodstown

Sandy loam (WoB2, WoC2) - moderately well drained. Both erosion control and improved drainage are needed due to seasonally high water table. Capability units IIe-36 and IIIe-36. Moderately coarse textured and strongly acid. Natural fertility is medium to low. Suitable for some crops except where limited by slope.

NOTES AND COMMENTS

GRASSES

Agropyron cristatum (L.) Gaertn.

PI-330685, a perennial bunchgrass from Iran, produced medium numbers of fine, erect stems. Leaves were medium in quantity, soft, both basal and cauline. Mature size was 35-40x30 cm. Leafspot was severe and the plants were dormant through the heat of summer after setting seed in July. Field B₃.

Agropyron desertorum (Fisch. ex Link) Schult.

Two accessions, PI-345583 and PI-345584, are reportable in 1971. Their performance was very typical of Agropyrons at Beltsville.

Both accessions from the USSR had abundant, fine and erect stems. The leaves were few and cauline, but PI-345583 had the softer leaves of the two. Both matured in mid-July.

PI-345583 reached 70-50x30 cm. at maturity. It was grown in field Ic. PI-345584 reached 70-58x36 cm. and was grown in field UP. Both accessions were fair to poor forage producers and lacked vigor during the hottest summer months.

Agropyron distichum (Thunb.) Beauv.

Sea wheat

A coarse perennial, which spreads by rhizomes. The sharply pointed, rigid leaves become straw-colored when mature. This South African grass occurs along the coast and is used there for dune stabilization.

PI-299459 from South Africa never matured at Beltsville. It was both rhizomatous and stoloniferous, but was slow to recover from winter damage. This accession did appear to have some drought tolerance. Field UP.

Agropyron fibrosum Nevski

PI-345585 from the USSR was a perennial bunchgrass, which did not grow as large as the A. desertorums reported above. It was 55-35x30 cm. at maturity in September, producing medium, fine, erect stems and medium, soft, basal and cauline leaves. Bloomed in July and August, but no fill was reported in 1971. Field UP.

Agropyron intermedium (Host.) Beauv.

PI-345586 performed very well at Beltsville. This Russian accession displayed good vigor and some potential as a forage producer. Mature size was 130-90x80 cm. with abundant, erect and medium-textured stems. Leaves were abundant, soft, and both basal and cauline.

The accession was variable in color with a glaucous appearance and has been a poor seed producer. Field G.

GRASSES

Agropyron pectiniforme Roem. & Schult.

PI-315359 was a stooling, perennial bunchgrass, which showed declining vigor at Beltsville. Its medium to fine, erect stems and few, soft, cauline leaves attained a size of 65-40x38 cm. in the fourth year after establishment. The accession from the USSR was very variable and worthless here. Field Ic.

Agropyron sibiricum (Willd.) Beauv.

This Russian accession, PI-326206, displayed fair to poor vigor at Beltsville. In its second year here, it produced abundant, fine, erect stems and few, soft, basal and cauline leaves to a size of 68-50x45 cm. It is a perennial bunchgrass, blooming June and setting seed in July. It has no potential here. Field UP.

Agropyron tauri Boiss. & Bal.

Agropyron tauri is a long-lived, vigorous species in Iran with a good potential for re-seeding stony, eroded areas. The palatability in early spring is also good.

Three Iranian accessions were started here in 1971. All three declined in vigor, turned brown and died by August. They were PI-330687, PI-330688, and PI-330690. Fields G and K.

Agropyron trachycaulum (Link) Malte

PI-345588 performed poorly at Beltsville. It developed severe leafspot in its first year and winterkilled in the first winter. This Russian accession was not well adapted to the climate at Beltsville. Field G.

Agrostis tenuis Sibth.

PI-344556 from Czechoslovakia was a poor performer at Beltsville. It was perennial with short rhizomes; bloomed in June and July, but failed to produce seed. Vigor and forage quantity were fair. Stems were medium in number, of moderate texture and erect. Leaves were abundant, soft and cauline. Size was 62-30x35 cm. Field G.

Arrhenatherum pratense (L.) Samp.

PI-345956 declined in vigor after planting in 1971. This Norwegian accession died by September, and was not suited to Beltsville summers. Field G.

Brachiaria decumbens Stapf

PI-344767 from Costa Rica performed poorly at Beltsville. It was grown in the greenhouse for 1 year and produced a very open foliage with few leaves. Stolons were sent to Georgia and Florida. At Beltsville the stolons were placed outside and winterkilled.

GRASSES

Brachiaria humidicola (Rendle) Schweick

Brachiaria humidicola is a very stoloniferous grass, which has provided good forage in high rainfall areas in South Africa.

PI-362146 was one of four Brachiarias received from Fiji in 1971. It is the most promising one, in that it produced a denser, more confined growth than the other three. It has abundant, medium-textured, prostrate stems with medium numbers of medium-textured, cauline leaves. Stolons were noted to a 120 cm. radius with excellent vigor. It is not winter-hardy at Beltsville.

Brachiaria mutica (Forsk) Stapf

Native to tropical Africa, perhaps one of the best tropical pasture grasses. It has been introduced to many countries. This grass contains cyanogenetic glycosides in the tissue and would be harmful to stock if eaten as a main source of forage.

Two weedy accessions, PI-362147 and PI-362148, from Fiji, displayed unusual vigor. They produced stolons to a 8.6 m. diameter in one growing season here. The coarse stems were moderately abundant and prostrate, except where they contacted other vegetation, whence they would climb all over the obstruction. The herbage was medium in density, with medium to few, harsh, cauline leaves.

Another accession, PI-362149, also from Fiji, had very similar growth, but produced a denser cover with slightly smaller, more numerous leaves.

Brachiaria ruziziensis Germain & Fvrard

See NPMC 1969 Annual Report for introduction.

<u>PI</u> <u>and</u> <u>Origin</u>	<u>Habit</u>	<u>Stems</u>	<u>Leaves</u>	<u>Size (cm.)</u>	<u>Density</u>	<u>Field,</u> <u>Maturity,</u> <u>and</u> <u>Notes</u>
344764 Australia	Stolon	A,C,E-P	A,S,C+WD	112-91x360	VD	Field G Matured-October Excellent, pro- strate, winterkilled.
344765 Guatemala	Stolon	A,C,E-P	A,S,C	112-100x330	M	Field G Mature-October Severe leaf disease, winter- killed.
BN-19529 Ivory Coast	Stolon	A,C,E-P	A,S,C	0-100x186	D	Field UP Matured-Not Very pubescent, winterkilled.

GRASSES

Brachypodium pinnatum (L.) Beauv.

See NPMC 1969 Annual Report for introduction.

<u>PI</u> <u>and</u> <u>Origin</u>	<u>Habit</u>	<u>Stems</u>	<u>Leaves</u>	<u>Size (cm.)</u>	<u>Maturity</u>	<u>Field</u> <u>and</u> <u>Notes</u>
206545 Greece	Rhiz.	F,F,E	A,M,B+C	66-46x41	June	Field Ic. Very leafy. Not as good as BN-9867.
253298 Yugoslavia	Bunch	M,F,E	M,S,C	81-41x25	June	Field G. Severe leafspot. Average.

Brachypodium sylvaticum (Huds.) Beauv.

PI-344569 was variable in size. An average size during the second growing season was 70-48x47 cm. Moderate numbers of fine, erect stems and abundant, soft, nearly basal leaves were produced by this Czechoslovakian accession. It developed light leafspot during the hot months, but grew well in cool weather. Field UP.

Brachypodium sp.

PI-344570 was injured by summer heat at Beltsville. The good fall regrowth, and the rhizomatous habit of this Czechoslovakian accession allowed it to survive the winter. During its second year, this accession produced abundant, medium to fine textured and erect stems, bearing medium numbers of soft leaves. Size at maturity in June was 60-50x40 cm. Field G.

Bromus arvensis L.

PI-338632 from Morocco was an annual bunchgrass at Beltsville. It produced few stems and leaves to a size of 50-20x23 cm. It died shortly after maturity in August. Field B₃.

Bromus biebersteinii Roem. & Schult.

PI-341222 produced very abundant stems of medium texture that were erect to weeping. Leaves were medium to abundant in number, soft and cauline. Mature size was 110-60x110 cm. in June. Forage quantity was fair to good. This Bulgarian accession was a good seed producer. Field Hickory.

PI-341223 was superior to PI-341222 in leafiness, density and seed production, but did not attain as large a size. Mature size was 85-50x100 cm. with abundant leaves and stems. Vigor and forage quantity were good, and this Bulgarian accession remained strong through the summer heat. It has promise as a conservation plant. Field Hickory.

GRASSES

Bromus inermis x tyttholepis (hybrid)

This hybrid is supposedly resistant to Pyrenophora bromi, the leafspot fungus. The leaftips did become black during the hot months.

PI-341221 did have good vigor; producing very abundant stems and moderately abundant leaves. Stems were very erect and of medium coarseness. Leaves were soft and cauline. Size at maturity in June was 110-80x70 cm. with a very dense, columnar habit. This perennial, rhizomatous grass from Canada has some promise for conservation use. Field Hickory.

Bromus willdenowii Kunth

PI-338633 from Morocco did not perform well at Beltsville, lacking vigor and density. This perennial bunchgrass grew to 90-60x60 cm. at maturity in June. Few, soft leaves were borne on medium numbers of medium-textured, erect to weeping stems. Moderate leafspot was observed. Field Hickory.

Calamagrostis lapponica (Wah.) Hartm.

This grass is a native from Scandinavia to western Siberia. Rhizomatous, it forms loose tufts 30x100 cm. tall. Common to dry Arctic tundra and dry mountain slopes.

PI-345971, a Norwegian accession, did not tolerate the Beltsville climate. It lost vigor immediately after planting, and was dead by June. Field G.

Catabrosa aquatica Beauv.

Catabrosa aquatica is common throughout Europe to Asia. A perennial with creeping rhizomes, which thrives in wet meadows.

PI-314367, a Russian accession, reached a size of 20x60 cm. and produced a lush mat of leaves and stems in the greenhouse. Before maturing it lost vigor and died 10 months after planting.

Cenchrus ciliaris L.

'Nunbank' PI-339892 from Australia, produced abundant, coarse, erect stems, bearing medium numbers of medium-textured leaves. Mature size in August was 152-112x90 cm. The flowers had purple awns. The plant was most vigorous during the late summer - early fall period, but winterkilled. Field G.

'Tarewinabar' PI-339893 also from Australia, performed much like PI-339892. The foliage was more leafy and dense. The mature size in August was 182-140x182 cm. PI-339893 also winterkilled. Field G.

GRASSES

Chloris gayana Kunth

PI-338636 from Morocco was a stoloniferous grass, which winterkilled at Beltsville. It produced abundant, coarse, erect stems with medium numbers of soft, cauline leaves. At maturity in July, the plants had a size of 94-64x102 cm. This accession was a heavy seed producer in its first growing season. Field UP.

Dactylis glomerata L.

'Currie' PI-323255 from Australia, was not suited to the Beltsville climate. It produced few stems and leaves to a size of 71-41x15 cm. by May and then went dormant for the rest of the growing season. Field B.

PI-325307, a perennial bunchgrass from the USSR, had variable size and severe leafspot. Mature size in June was 90-45x50 cm. with few, soft, basal and cauline leaves. The erect stems were medium in numbers and texture. Forage production and vigor were fair. Field Ic.

Dichanthium annulatum (Forsk) Stapf

'Kleberg' BN-10363-58 from Texas, produced few stems and leaves with a growth to 91-46x46 cm. The stems had a geniculate form, and rooted at the lower nodes. 'Kleberg' winterkilled at Beltsville. Field G.

Digitaria fuscescens (Presl) Henr.

Common to India, Burma, and Maylasia. Weak plants with procumbent or ascending culms, rooting at nodes with densely leafy stolons. A perennial.

PI-196479 from Brazil winterkilled in its first winter at this location, however, during the growing season it formed a good groundcover. This stoloniferous grass was very vigorous and aggressive. Size at maturity was 15-7x100 cm. with a dense mat-like appearance. Stems were abundant, fine and prostrate with medium numbers of soft leaves. It has possibilities for warmer climates. Field UP.

Digitaria milanjiana (Rendle) Stapf

Another vigorous Digitaria, PI-284544 grew a dense herbage in one growing season at Beltsville. At a mature size of 172-91x254 cm. in August there were medium numbers of coarse, erect stems bearing abundant, medium-textured leaves. This aggressive, stoloniferous grass is more suited to warmer climates as it winterkilled here. Field G.

Digitaria smutzii Stent

BN-19527-70 did not grow as densely as the above Digitarias, though it did attain a size of 204-114x101 cm. Stems were abundant to medium, coarse and erect. Leaves were medium in numbers and texture, both basal and cauline. Maturity occurred in August. Field G.

GRASSES

Digitaria violascens Link.

Glabrescent, tufted, erect annual 20 to 50 cm. tall. Long, densely flowered with spikelets white-green and sometimes reddish-purple tinged. Matures August to October and is found in grassy waste places and cultivated in fields of Japan, China, Korea and naturalized in South America.

PI-312905 was a good prostrate, rhizomatous groundcover, and thus does not fit the above species description. This accession from Ecuador had rapid recovery after being cut in early October. Leaves were medium in numbers, soft, basal and cauline. Stems were medium, fine, and sub-erect. In July, the mature size was 46-5x50 cm. Ants inflicted moderate damage and the plants winterkilled the first year. PI-312905 appeared to be a good seed producer. Field Ic.

Digitaria sp.

PI-351875 arrived from the Ivory Coast in poor condition. A few culms survived, regained vigor in June and had produced an excellent groundcover with a growth to 150-127x300 cm. Maturity occurred in September and October, at which time the plant was very stoloniferous. Stems were abundant, coarse, and erect bearing abundant, harsh leaves. The stolons were fine-textured. The plant winterkilled at Beltsville. Field UP.

Echinochloa polystachya H.B.K.

A forest hill grass, often forming thick masses in secondary jungles is distributed throughout the tropical regions of both hemispheres. The hooked spines on the upper glumes provides for mechanical spreading of the species by any passing animal.

PI-344771 from Costa Rica produced a very coarse, open herbage. This accession failed to mature in its first year and then winterkilled. The largest size noted was 13x110 cm. with few, coarse, prostrate stolons and few, medium-textured, cauline leaves. Field G.

Echinopogon nutans C. E. Hubb.

PI-257717 produced abundant, fine, erect to sub-erect stems with few, soft, basal and cauline leaves. Mature size in July was 66-25x30 cm. The most notable fact about this Australian accession is that the seed shatters when green. This accession winterkilled in its first winter. Field G.

GRASSES

Elymus sibiricus L.

A loosely tufted perennial, 60 to 210 cm. tall. The inflorescence is a loose spike with awned spikelets. It is found in flooded meadows, fallow land in forests and steppe regions of Siberia and the far East. Low palatability after heading.

PI-326267 displayed fair vigor at Beltsville despite a severe case of leafspot. After two years this Russian bunchgrass attained a size of 50-40x40 cm. with few, fine, erect stems and abundant soft, basal and cauline leaves. Maturity occurred in July. Field UP.

Eragrostis atherstonei Stapf

PI-299038 from South Africa was a bunchgrass, which rooted at the lower nodes. It produced abundant stems with a fine, sub-erect habit. Leaves were few, soft and cauline. At maturity in July the size was 89-46x38 cm. This accession was very delicate, and somewhat weedy, but a good seed producer. Field G.

Eragrostis brownei (Kunth) Nees ex Steud.

A tufted, annual grass with erect culms, ascending or decumbent and spread out in a circle. It is found in dry fields and occurs in Indonesia and probably other southeastern Asian countries.

BN-9310-62, out of PI-238340, produced few stems and leaves with a soft, fine growth. The stems were sub-erect and appeared to be lodging, yet were not. At maturity in August, the size was 25-10x43 cm. after which, the plants withered and died.

Eragrostis chloromelas Steud.

PI-338640 from Morocco grew well at Beltsville. In its second year, it produced a mature size of 130-80x80 cm. Stems were abundant, medium-textured and erect to weeping. The leaves were moderately abundant, medium-textured, and mostly basal. This warm-season grass was a good seed producer. Field G.

Eragrostis curvula (Schrud.) Nees

This Moroccan accession, PI-338641, appears to be a good dense weeping lovegrass. The large size, 200-80x80 cm., caused identification doubt, but the identity was confirmed by Dr. Terrell, ARS. Stems were moderately abundant, coarse, and erect to weeping. The basal and cauline leaves were abundant and medium in texture. Winter damage was moderate, and the plant did not regain vigor until mid-July. Field G.

Eragrostis lehmanniana Nees

PI-338642, another Moroccan accession, winterkilled in its first year at Beltsville. This grass, produced abundant, fine, erect to sub-erect stems and few, soft, cauline leaves. Rhizomes to 9 cm. were noted. Mature size in September was 48-23x36 cm. In general, the accession was poor here. Field Ic.

GRASSES

Eragrostis megalosperma F. Muell.

PI-257724 had a columnar, very erect, bunchgrass habit. The medium numbers of fine stems had medium numbers of soft leaves. This Australian accession failed to mature, but attained a size of 94x31 cm. Unfortunately, this accession winterkilled, preventing further observation. Field Ic.

Eragrostis porosa Nees

An annual with erect culms to 80 cm. has leaf sheaths covered with bulbous-based hairs. This plant occurs in southwest Africa. It is related to E. atherstonei and E. horizontalis.

PI-190317 from South Africa, was a bunchgrass with short stolons. It produced abundant stems with few, soft leaves. Stems were fine and erect to sub-erect. At maturity in July the size was 92-56x61 cm. Seed ripened and shattered over the period June to September. Excessive lodging had occurred by October. Field Ic.

Eragrostis sarmentosa (Thunb.) Trin.

A perennial, stoloniferous grass with culms to 30 cm. long from a creeping base. It has a limited distribution in South African coastal areas.

PI-203352 was not hardy at Beltsville. This South African accession produced a very poor cover with few stems and leaves. At full bloom in July the size was 23-10x56 cm. Field UP.

Festuca arundinacea Schreb.

<u>PI</u> <u>and</u> <u>Origin</u>	<u>Habit</u>	<u>Stems</u>	<u>Leaves</u>	<u>Size (cm.)</u>	<u>Vigor</u>	<u>Field,</u> <u>Maturity,</u> <u>and</u> <u>Notes</u>
283279 Israel	Per- bunch	F,M,E	F,M,B+C	100-61x65	Good	Field UP Matured-July No value. Open.
283283 Morocco	Per- rhiz.	M,C,E +weep	F,M,B+C	115-41x30	Fair	Field G Matured-July Open.
314685 U.S.S.R.	Per- rhiz.	A,M,E	M,M,B+C	160-110x90	Good	Field G Matured-July Broad leaves, moderately dense.

None of the above accessions of F. arundinacea appear to have exceptional conservation value.

GRASSES

Festuca ovina L.

PI-344581 from Czechoslovakia grew in small, tight-stooling bunches. It remained mostly green through the winter, and appears to have some ornamental value. The stems were moderately abundant, fine and erect. The basal leaves were very fine and very abundant. At maturity in June, the size was 32-15x60 cm. Field G.

Festuca purpurescens Banks & Soland

PI-343072 from Argentina performed very poorly at Beltsville and winterkilled the first year in the field. Field G.

Festuca rubra L.

PI-270400 was a sod-forming, rhizomatous perennial from the USSR. Variable in performance, it had abundant, fine, erect stems and moderately abundant, soft leaves. It grew to a size of 46-33x36 cm. in May. The grass was destroyed after suffering mower damage. Field B₃.

Holcus lanatus L.

BN-15611-64 from Algeria was a perennial bunchgrass with a vigorous low habit. It produced medium numbers of erect, medium-textured stems and abundant, soft, cauline and well-distributed leaves. Mature size in July was 55-25x40 cm. This accession suffered severe winter injury and died the following August. Field G.

Hyparrhenia sp.

PI-344769 from Costa Rica was not hardy at Beltsville and only survived one growing season. Observations were on one culm only.

The leaves and stems were glaucous green with long hairs. Seedheads reflexed 160° with long (1½ inch) brown and yellow awns. The stems were brittle, medium in number and erect, bearing few, soft leaves. Plant size was 75x75 cm. Field G.

Lolium perenne L.

'C.B. Pasture Type' PI-303042 from the Netherlands, had moderate numbers of medium-textured erect stems. The basal leaves were abundant and soft. Largest size was 40-20x30 cm.

Unfortunately, this accession was not suited to the Beltsville summer, suffering from severe leafhopper and heat damage. By September of its second year, it was 50 percent dead. Field JP.

GRASSES

Melica altissima L.

Two accessions from the USSR were grown at Beltsville. Both were hardy perennials with a slow rhizomatous habit and dense foliage.

PI-325418 produced a good amount of forage with abundant, medium-textured, erect stems and abundant, soft, cauline leaves. Mature size in June was 80-70x75 cm.

PI-325417 was smaller at 45-40x40 cm., but produced abundant, soft leaves on fine, erect stems.

Both accessions had light leafspot, and bloomed from June to September. Field Hickory.

Melica taurica K. Koch

PI-325419 from the USSR produced abundant, fine, erect and weeping stems but only few, soft leaves. The mature size in June was 70-40x60 cm. By August the plants exhibited heat injury to 50 percent of the leaves, and little fall recovery was noted. The plants had a stooling habit. Field B₃.

Miscanthus floridulus (Labill.) Warb.

This species of silvergrass is native to the lowlands of the Asian Pacific Islands. In general, the silvergrass' are thought of as ornamentals.

BN-19544-70, an accession from New Guinea, survived only one growing season at Beltsville and never matured. It produced abundant stems with a coarse, erect habit. The broad leaves (1.3 cm.) were abundant, medium in texture and cauline. By September, the size was 103x9¹/₄ cm. Field Ic.

Oryzopsis

<u>PI</u> and <u>Species</u>	<u>Origin</u>	<u>Stems</u>	<u>Leaves</u>	<u>Size (cm.)</u>	<u>Vigor</u>	<u>Notes</u>
271588	India	F,M,E	F,M,B	130-95x60	Fair	Greenhouse. Not happy. Discarded.
<u>O. aequiglumis</u> Duthie						
306624	Israel	F,M,E	F,M,B	10 ¹ / ₄ -77x60	Fair	Greenhouse. Not happy. Discarded.
<u>O. coerulescens</u> (Desf.) Hack.						
330578	Israel	VF,F,E	VF,S,C	46-20x13	Poor	Field Ic. Worthless here. Winterkilled.
<u>O. miliacea</u> (L.) Benth. & Hook.						

GRASSES

Panicum coloratum L.

PI-338656 from Morocco was not hardy at Beltsville. It had short rhizomes, abundant, coarse, erect stems, and medium numbers of soft, cauline leaves. At maturity in September the size was 172-132x9¹/₄ cm. Field Ic.

Panicum maximum Jacq.

<u>PI</u> and <u>Origin</u>	<u>Habit</u>	<u>Stems</u>	<u>Leaves</u>	<u>Size (cm.)</u>	<u>Vigor</u>	<u>Field,</u> <u>Maturity,</u> and <u>Notes</u>
284159 Kenya	Bunch	A,M,E	A,S,C	178-122x127	Excellent	Field G. Matured-August. Winterkilled, dense. Good seed producer.
331347 Uganda	Bunch	F,C,E	A,H,B	148-66x140	Good	Field Ic. Matured-August. Winterkilled, open. Prickly pubescence on leaves.
338655 Morocco	Stolon	A,M,E	A,VS,C	200-150x152	Excellent	Field G. Matured-August. Winterkilled, dense. Good seed producer.

Panicum prolutum F. Muell

An erect, perennial, tussock grass native to Australia. Often growing to 3 feet with stiff leaves that become enrolled when dry. A palatable, valuable pasture grass due to its excellent drought tolerance.

PI-338658 was a bunchgrass from Morocco. The stems were abundant, medium in texture and erect. Leaves were few, soft and cauline. By August the mature size was 110-100x62 cm. Moderate leafspot was observed. Like other Moroccan accessions, this one winterkilled in its first winter. Field G.

Panicum turgidum Forsk.

Panicum turgidum is a perennial found in dense clumps from Pakistan westward to tropical Africa. It reputedly makes good camel fodder. It covers entire coastal plain areas around the Red Sea and in some places the grain is collected for food.

PI-292454 from Israel was never happy at Beltsville. It produced an open herbage with medium numbers of medium-textured, erect stems. The leaves were few and of medium texture. Moderate lodging and excessive shattering were observed. Field B₃.

GRASSES

Paspalum cromyrorhizon Trin. ex Doell.

A perennial with very short rhizomes, almost tufted. Highly sterile. Grows on low slopes and moist fields forming a low carpet. Native to Uruguay.

<u>PI</u> <u>and</u> <u>Origin</u>	<u>Habit</u>	<u>Stems</u>	<u>Leaves</u>	<u>Size (cm.)</u>	<u>Vigor</u>	<u>Field,</u> <u>Maturity,</u> <u>and</u> <u>Notes</u>
276242 Uruguay	Sod, stooling	A,F,E	F,S,B	61-20x30	Fair	Field Ic-GH. Matured-August. Poor seed.
303967 Brazil	Slow sod, stooling	F,F,E	F,S,B	41-12x12	Fair	Field Ic-GH. Matured-August. Poor seed.

The two above grasses produced a fairly dense herbage in the greenhouse and had good vigor.

Paspalum guaraniticum Parodi

Native to Paraguay, Paspalum guaraniticum is a densely tufted perennial found infrequently on sandy soil. The moderately soft foliage is palatable, but the plants are only moderate in production.

PI-310065 was grown as Paspalum cromyrorhizon, but was about 35 cm. taller in the greenhouse. This Brazilian accession had good vigor and matured in October at a size of 98-33x64 cm. The erect stems were medium in number and texture. The basal leaves were soft and abundant. A poor seed crop was noted.

Paspalum guenoarum Arech.

Native to Argentina, Paraguay and Uruguay. Paspalum guenoarum is a tufted perennial up to 1.5 m. high, which requires a sub-tropical climate with a good rainfall. A high yielding pasture grass.

PI-337559 from Argentina winterkilled at Beltsville, but produced abundant stems and leaves the first season. The coarse stems were erect, bearing medium-textured leaves. This bunchgrass was a good seed producer, and the mature size in September was 128-94x100 cm. Field UP.

Paspalum nicorae Parodi

PI-310061 from Brazil was grown in the greenhouse, where the vigorous plants produced abundant stems and leaves. The medium textured stems were sub-erect; the soft leaves were basal. The shortly rhizomatous sod was 36-25x50 cm. in size at maturity in August. Poor seed.

GRASSES

Paspalum notatum Fluegge

PI-337569 from Argentina produced a very good soil cover with compact, prostrate leaves, but winterkilled at Beltsville. Stems were medium in number and texture, with the ends being erect. The leaves were abundant, soft and basal. Mature size in September was 70-25x45 cm. Seed production was excellent. Field Ic.

Paspalum plicatulum Michx.

BN-19526-70 was a vegetative accession from the Ivory Coast. It produced medium numbers of stems and leaves. The soft leaves were borne by medium-textured, erect stems. A size of 100-76x76 cm. was noted in August. A good seed crop was collected in September and the accession winterkilled by spring. Field G.

Paspalum rojasii Hack.

Paspalum rojasii is a tufted perennial with culms to 1 m. high. Occurs in Paraguay and adjacent countries where it is thought to be a good forage grass. Possibly a synonym for Paspalum guenoarum.

Like most South American accessions, PI-263381 from Paraguay winterkilled in its first winter at Beltsville. However, it produced good forage during the growing season. Abundant leaves and stems were noted. The soft leaves were on coarse, erect stems. The size by October was 128-100x106 cm. Field UP.

Paspalum scrobiculatum L.

PI-338662 from Morocco winterkilled at Beltsville. This bunchgrass was very prostrate, with the heads lying on the ground during early bloom. Stems were abundant, coarse and sub-erect (during late bloom), with medium numbers of wide, soft leaves. At maturity in August the size was 115-46x92 cm. with excessive lodging. Field Ic.

Paspalum wettsteinii Hack.

A broad-leaved, semi-prostrate perennial grass, which forms large clumps. It appears to persist on a variety of soil types, and offers better summer production than Paspalum dilatatum. Native to Argentina.

PI-342575 from Argentina was a very stoloniferous grass. It was very prostrate and provided excellent soil cover with abundant stems and leaves. The stems were coarse with well-distributed, harsh, pubescent leaves. Unfortunately, it matured too late for Beltsville and the seed was frosted. By mid-October, the size was 50x200 cm. before it winterkilled. Field G.

GRASSES

Pennisetum alopecurus Steud.

A very tough, vigorous grass of western India. Mostly found on sandy soil near water, excluding other vegetation with its thick growth. Used in the manufacture of brooms and cordage. Most likely not a good forage - a potential weed.

PI-269235 from India produced a medium amount of wirey, basal leaves, but did not mature at Beltsville. In October, it was 96x66 cm. This accession winterkilled in its first winter at Beltsville. Field G.

Pennisetum clandestinum Hochst.

PI-344768 from Costa Rica was both rhizomatous and stoloniferous. It had abundant, medium-textured, prostrate stems with medium numbers of soft leaves. This grass was initially judged weedy, because it produced an open aggressive sod. By August the size was 56x152 cm. and the cover improved. This grass winterkilled at Beltsville. Field G.

Pennisetum orientale L.C. Rich

PI-330717, a perennial, stooling bunchgrass, had medium numbers of stems and leaves. The stems were fine and erect to sub-erect with medium-textured leaves. Some basal leaves were noted. This Iranian accession matured in September with a size of 50-40x50 cm. Though it suffered some winter damage, this accession appeared winterhardy at Beltsville. Its main value here is ornamental. Field G.

Pennisetum pedicellatum Trin.

PI-271146 from India was very dense and leafy. The abundant, erect stems and very abundant leaves were both medium in texture. At maturity in September the size was 140-128x128 cm.; this accession was not hardy at Beltsville. Field Ic.

Pennisetum setaceum (Forsk.) Chiov.

Beersheva No. 4790

PI-330679, an accession from Israel, appeared to have ornamental value at Beltsville, but was not hardy. The fluffy reddish-purple spikes were abundant, on coarse, erect stems. Leaves were abundant, harsh, and basal. At maturity (from July to September) the size was 128-100x80 cm. Field G.

GRASSES

Phalaris aquatica L.

<u>PI</u> <u>and</u> <u>Origin</u>	<u>Habit</u>	<u>Stems</u>	<u>Leaves</u>	<u>Size (cm.)</u>	<u>Field,</u> <u>Maturity,</u> <u>Winterkilled,</u> <u>and</u> <u>Notes</u>
284197 France		VF,M,E	A,S,B	100-56x56	Field UP. Matured-September. Winterkilled.
284199 U.S.A.		F,M,E	F,S,C	92-46x36	Field UP. Matured-August. Winterkilled. Seed may be cross- pollinated.
284204 Israel	Bunch	F,M,E	F,S,C	71-31x21	Field Hickory. Matured-July. Winterkilled.
284207 Portugal	Bunch	F,M,E	F,S,C	84-38x31	Field UP. Matured-July. Winterkilled. Worthless here.
284208 Algeria	Bunch	F,F,E	VF,S,C	81-38x10	Field Hickory. Matured-July. Winterkilled. Bad leafspot.
284216 Spain	Per- bunch	M,F,E+W	F,S,C	150-90x80	Field Hickory. Matured-July. Did not winterkill. Leafspot, probably hybrid, <u>P. aquatica</u> x <u>P. arundinaceae</u>
284219 Spain	Per- bunch	M,M+F,E	M,S,C	100-60x55	Field UP. Matured-August. Did not winterkill. Variable, Open
284221 Spain	Bunch	M,M,E	F,S,C	71-25x18	Field Ic. Matured-July. Winterkilled. Stemmy. Open.
284223 Israel	Per- rhiz.	VF,F,E	VF,S,C	50-35x10	Field UP. Matured-August. Did not winterkill. Open.

GRASSES

Phalaris aquatica L. (cont'd)

<u>PI</u> <u>and</u> <u>Origin</u>	<u>Habit</u>	<u>Stems</u>	<u>Leaves</u>	<u>Size (cm.)</u>	<u>Field,</u> <u>Maturity,</u> <u>Winterkilled,</u> <u>and</u> <u>Notes</u>
284224 Israel		VF,F,E	VF,S,C	56-15x15	Field Ic. Matured-July. Winterkilled. Summer dormancy.
284225 South Africa		A,M,E	F,S,C	105-65x58	Field Ic. Matured-July. Did not winterkill. Not vigorous.
314963 'Seedmaster' Australia		A,C,E	A,S,B+C	127-81x71	Field Ic. Matured-September. Winterkilled. Variable leaves.
338665 Morocco	Rhiz.	F,M,E	F,S,C	74-38x20	Field Ic. Matured-August. Winterkilled.

Phalaris arundinacea L.

PI-338666 from Morocco was variable at Beltsville, with distinct size differences noted. By maturity in July the size ranged from 80-50x40 cm. to 110-75x65 cm. All plants had few, medium-textured, erect stems but variable leafiness. Leaves were medium to abundant, soft and cauline. By late summer of the second year the plants had poor vigor and were discarded. Field G.

PI-344557 has excellent vigor and very good forage production at Beltsville. This Czechoslovakian accession had abundant, coarse, erect stems and abundant, medium-textured, cauline leaves. The size at maturity in June was 150-80x90 cm. This accession may have marginal palatability. Another drawback was its tendency to shatter excessively, but with careful timing, good seed crops could be harvested. Field G.

PI-345662 from the USSR was a perennial with short rhizomes at Beltsville. It had good vigor and good forage production. Stems were abundant, medium to coarse and erect, bearing medium numbers of soft leaves. Mature size in June was 160-120x90 cm. Excessive shattering was noted. Field G.

GRASSES

Phalaris arundinacea x aquatica (hybrid)

PI-284201 from South Africa was a perennial with rhizomatous growth. The plants were mature in August at a size of 190-100x55 cm. The medium numbers of stems were coarse and erect bearing a medium amount of soft leaves. This variable, stemmy accession had fair cover and overwintered well. Field UP.

Poa bulbosa L.

PI-314164 from the USSR appeared to suffer from the heat at Beltsville. This bunchgrass produced one seedhead per plant - the stem being fine and erect. The few leaves were soft and basal. The mature size was 30-15x3 cm. in early June. The plants died after maturing, but a test in a cooler climate is needed for better evaluation. Field Hickory.

Poa ligularis Steud.

PI-284255 from Argentina was not vigorous here. After being severely weakened in its first summer, this bunchgrass produced only small tufts and essentially no forage. By September the leaves were 70 percent dead. Field G.

Setaria glauca (L.) Beauv.

PI-271610 from India was a very prolific seed producer, and though it winterkilled, many seedlings were noted in the spring. Stems were very abundant, medium-textured and erect with medium numbers of soft pubescent leaves. By July, the size was 71-43x46 cm. It had excellent vigor in July and exhibited rapid, abundant recovery after being cut in September. Field UP.

Setaria queenslandica Domin

PI-316342 from Australia was stoloniferous, but not hardy at Beltsville. It has mainly ornamental value here with abundant red leaves. The stem production was sparse with medium-textured and erect to sub-erect habit. The mature size was 38-38x50 cm. A poor seed producer. Field G.

Sorghum hybrid

'Sandfighter' BN-15343-63 was an annual, single-stem variety. It had medium numbers of medium-textured leaves. Mature size in September was 240x170 cm., but the cover available with the plants 1 foot apart was only fair. The plants displayed good vigor at Beltsville. Field G.

'Windbreaker' BN-15344-63 was very similar to BN-15343-63, but had few leaves and a smaller size of 200x40 cm. Though it had good vigor, it had a very open habit and would be of use mainly in a wildlife planting. Field Ic.

GRASSES

Sporobolus fimbriatus Nees

A densely-tufted, robust, perennial with stout, short rhizomes. Usually 60 to 90 cm. high. Often found on dry areas with poor soil. Native to South Africa. When wilted, the grass yields hydrocyanic acid.

PI-196373 from South Africa was a bunchgrass with abundant leaves and stems. The erect stems were coarse to medium in texture. The soft leaves were both basal and cauline. By maturity in August, the size was 215-102x75 cm. It winterkilled in its first winter. Field G.

Stipa barbata Desf.

PI-330722 from Iran failed to achieve vigorous growth at Beltsville. Ants and leafspot weakened the plants further and the first winter killed them. Field G.

Stipa capillata L.

PI-325477 was a perennial bunchgrass. Aside from the heat damage expected at Beltsville, this Russian accession showed poor conservation potential due to a solitary habit. Plant size was variable, but generally sparse growth was noted. Field G.

Stipa neesiana Trin. & Rupr.

A hard grass with low protein and high fiber content. Cattle prefer the young tender shoots during spring, but only graze the hard winter growth when other forage is not available.

PI-237818 from Spain failed to mature in its first and only growing season. The basal leaves were abundant and harsh with a size of 40x33 cm. The overall impression was that this accession looked better than most Stipas do at Beltsville, but it winterkilled. Field G.

Tetrachne dregei Nees

PI-330683 a bunchgrass from Israel producing moderately abundant stems and leaves. The fine, erect stems began to weep later in the growing season and medium-textured leaves were borne on the stems. At maturity in August the size was 110-55x45 cm. The vigor was only fair and the accession did not winterkill in its first winter. Field G.

NOTES AND COMMENTS

LEGUMES AND OTHERS

Adesmia bicolor (Poir.) DC

A rhizomatous and stoloniferous legume of South America. Commonly found on heavy soils in the more fertile pastures of Argentina and Uruguay. Two accessions were started in 1970 and winterkilled the first winter.

PI-285106 from Chile had a medium amount of forage with very prostrate habit. It was rated a fairly open groundcover with stolons to 45 cm. Overall size was 5x60 cm. at bloom in July. Field B₃.

PI-323407 from Uruguay had more abundant leaves than PI-285106, but was otherwise very similar in size and habit. It failed to flower in its only season at Beltsville. Field B₃.

Alnus mayrii Collier.

An alleged hybrid of Alnus japonica (Thunb.) Steud. and Alnus hirsuta Turcz. A tree, common to the wet lowlands of the Japan - Korean area. Often planted around rice paddies. Branches grey-brown to brown-pubescent. Leaves 6 to 13 cm. long and 4 to 6 cm. wide.

PI-317356 from Korea was very densely branched and leaved producing a thick cover of 100x80 cm. in size. It lived for two growing seasons before apparently dying of wooly aphid infestations. Field E.

Anagyris foetida L.

This leguminous shrub is native in an area from the Mediterranean to the maritime Alps. It is reported to be both good and bitter as forage.

PI-302472 from Greece was a woody perennial with medium numbers of erect stems. The leaves were trifoliate, moderate to abundant, soft and well distributed. While in the greenhouse for two years the plants exhibited occasional periods of excellent growth. However, they died two months after planting outside. Field E.

Arenaria gypsophiloides L.

A tufted perennial with a rosette pattern. The inflorescence is many-flowered. Found on stony slopes and meadows of Bulgaria, Trans-cavcasica, north and northwestern Iran and Turkey.

PI-344563 from Turkey was grown in the coldframe. It produced a few coarse, erect stems in a bunch. Medium numbers of soft basal and cauline leaves were noted. The size occurring in June was 25-13x10 cm. Small white flowers with notched petals were noted, but the plants failed to mature. By October the plants were dead. This accession is of little conservation value.

LEGUMES AND OTHERS

Astragalus glycyphyllos L.

PI-344565 from Czechoslovakia grew well at Beltsville and did not become heat damaged during August. During the second growing season abundant leaves and stems provided good cover with a 40x70 cm. size. Sub-erect coarse stems and soft leaves were noted on this rhizomatous plant. At bloom in June, greenish-white flowers were observed. Maturity occurred in July and August. Field Ic.

Astragalus siliquosus Boiss.

A semi-perennial tap-rooted species adapted to sub-steppic climates with cold winters. Palatability and forage yield excellent in spring and summer. Commonly found in waste land and fallow fields in Iran.

PI-330696 from Iran was mistakenly placed in a heavy-soiled area, which remains wet after a rain. In addition, a heavy aphid attack also weakened the plants. As a result, this accession gradually lost vigor over the growing season. It did bloom in August, producing a yellow terminal raceme, but did not set seed. Field K.

Coronilla varia L.

PI-344573 from Czechoslovakia was an excellent groundcover at Beltsville. Abundant stems and leaves grew to a size of 50x140 cm. before slowing during the hot months. Growth became vigorous again in the fall, with lush growth in October. The stems were medium in thickness and sub-erect; the leaves were soft and cauline. Bloom occurred in June and July with maturity in mid-July. Field G.

Euonymus fortunei (Turcz.) Hand.-Mazz.

In Japan, the plant is commonly found on the lower mountains as a creeping groundcover. This evergreen will climb.

'Longwood' PI-275073 a very slow growing accession from Japan was of only ornamental value here. The stems were few, fine and prostrate, with medium textured, well-distributed leaves. The plants grew slowly both in the greenhouse and in the field. This accession did not mature before being shipped out. Field E.

Exomis axyrioides Moq.

A warm, tender, perennial from South Africa, which is a good high-protein forage. This three to four foot high shrub is found in waste places and old pastures in southern Africa.

PI-270495 produced abundant branches and leaves in the greenhouse at Beltsville. The soft leaves were well distributed on coarse sub-erect branches. The growth was slow here, not hardy and no plants or seed were produced.

LEGUMES AND OTHERS

Hypericum calycinum L.

Hypericum calycinum is felt to be an excellent groundcover on sandy soils. It is shade tolerant and spreads well by stoloniferous roots.

BN-12900 of commercial origin winterkilled at Beltsville in its second year on a clay soil. It produced few medium-textured, sub-erect stems bearing medium numbers of soft leaves. The small size attained in one complete growing season, 20x23 cm., indicates the plants were not suited to the soil. Field NGC.

Hypericum elatum Dry.

A shrub or sub-shrub 3 to 4 feet high. Leaves are ovate-oblong and 1.5 to 3 inches long. The flowers are 1 to 1.5 inches across in terminal panicles of several to many. Native to the Canary Islands and Madeira.

PI-345990 from the Canary Islands via Norway was not hardy at Beltsville. In one growing season it reached 66x35 cm. in size. The coarse, erect, multiple stems supported abundant, soft leaves. For a good evaluation of this groundcover it should be tried in a warmer climate. Cold Frame.

Lathyrus aphaca L.

A glabrous climbing annual with slender angular stems; leaves lacking, stipules large and leaf-like. Found in dry, arid places, especially on calcareous soil. Native to most of Europe, western Asia and North Africa.

BN-19346-63 was grown in the greenhouse at Beltsville. The stems were medium in number, fine and prostrate. The medium numbers of soft stipules did not constitute much forage. Maturity occurred after 4 months at a size of 12x55 cm. Flowering was noted at 2 months.

Lathyrus erectus Lag.

Grown in the greenhouse, BN-19347-63 showed little conservation value. A small, solitary, annual, which was mature and dead after 6 months. This Turkish accession had few stems and leaves with fine, soft herbage. At maturity, this prostrate Lathyrus was 20x54 cm. in size and had purplish-white flowers. The entire pods dropped immediately after ripening.

According to Index Kewensis, Lathyrus erectus is a synonym for Lathyrus inconspicuus.

LEGUMES AND OTHERS

Lathyrus inconspicuus L.

An erect annual 10 to 35 cm. with non-winged stems. A small lavender corolla with whitish wings present. Exceptionally short, broad fruits.

Found in cropped and fallow fields above 1,500 m. elevation in south Europe and in southwestern and central Asia.

PI-200058 had excellent density growing in the greenhouse. The erect and prostrate stems were fine but abundant, bearing soft, abundant leaves. This Iranian accession bloomed (purplish-white) after 5 months and was fully mature at 7 months. No shattering was observed. The mature size was 18x33 cm.

Lathyrus tingitanus L.

Tangier scarlet pea

A vigorous annual from the western Mediterranean region. Winged, glabrous peduncle 2-flowered, with the flower being dark purple-red. and 1 inch long. Pod 4 to 5 inches long. Flowers June and July. An earlier species than sweet pea, it has been used for forage.

PI-346004 from Norway had a good spread of 400 cm. in diameter, but this sub-erect to prostrate accession was not very dense. The stems were medium in number bearing few, soft leaves well distributed over their length. Vigor in the greenhouse was good, but forage quantity poor. Maturity was in June and July.

Lotus caucasicus Kuprian

Nine accessions were grown at Beltsville during 1970 and 1971. All were original seed from the USSR and suffered from the summer heat.

<u>PI</u>	<u>Habit</u>	<u>Stems</u>	<u>Leaves</u>	<u>Size (cm.)</u>	<u>Vigor</u>	<u>Field, Maturity, and Notes</u>
325359	Per-Sol.	F,F,SE	F,S,C	16x40 cm.	Poor	Field G. Matured-July to September. Grazed by deer.
325370	Per-Sol.	F,F,SE	F,S,C	20x80 cm.	Fair	Field G. Matured-July. Brilliant yellow flowers.
325371	Per-Sol.	M,F,SE-P	F,S,C	40x100 cm.	Fair	Field G. Matured-July. Open.
325372	Per-Sol.	VF,F,SE-P	VF,S,C	12x30 cm.	Poor	Field Ic.

LEGUMES AND OTHERS

Lotus caucasicus Kuprian (cont'd)

<u>PI</u>	<u>Habit</u>	<u>Stems</u>	<u>Leaves</u>	<u>Size (cm.)</u>	<u>Vigor</u>	<u>Field, Maturity, and Notes</u>
325373	Per-Sol.	M,F,SE	F,S,C	30x64 cm.	Fair	Field Ic. Matured-July. Grazed. Very variable.
325374	Per-Sol.	A,M,SE	A,S,C	30x63 cm.	Good	Field Ic. Matured-July. Fairly good accession.
325375	Per-Sol.	F,F,SE	M,S,C	10x17 cm.	Poor	Field Ic. Matured-July. Very sparse vegetation.
325376	Per-Sol.	M,M,P	MA,S,C	35x65 cm.	Fair	Field B ₃ . Matured ³ -July. Variable.
325377	Per-Sol.	M,F,SE-P	M,S,C	10x40 cm.	Fair	Field B ₃ . Matured ³ -July. Small.

Lotus conjugatus L.

PI-283617 from Hungary was an annual with solitary, prostrate habit. It was grown in the greenhouse and demonstrated average characteristics there. The stems were medium in number and texture. Leaves were medium, soft and cauline. At bloom in June the size was 10x60 cm. Maturity occurred in July and August.

Lotus corniculatus L.

PI-322556 an accession from Brazil had hardy, moderately abundant stems and abundant leaves. The soft leaves were borne by medium textured, fairly erect stems. Moderate leafhopper and heat damage was noted, reducing the vigor to fair. The mature size was 30x 61 cm. in July and August. Field B₃.

Lotus tenuis Waldst. & Kit.

PI-246738 was rhizomatous and perennial, but produced an open, sparse cover. The fine, prostrate stems were abundant, but the soft leaves were few in number. During the 3 years, it was grown at Beltsville. This accession decreased in diameter of area covered from 110 to 31 cm. Maturity for this Spanish accession was in July. Field G.

LEGUMES AND OTHERS

Lysimachia nummularia L.

Moneywort

A yellow-flowered creeper that blooms from May to September. Grows best on moist soil, sending out many sturdy stems which root over the entire length. Not suited to dry areas.

BN-11043-68 was obtained from a commercial source as vegetative material. After successful planting on sandy soil it was divided and moved to a clay area. By spring of its second year, it had produced a solid mat 5x50 cm. in size. There were abundant, fine, prostrate stems with abundant, soft leaves. During the third fall, it was killed by an extended dry period.

Medicago marina L.

Sea medic

Sea medic is of no value as a fodder. It is native to the USSR and the Mediterranean region. Perennial.

PI-292417 from Israel was grown in the greenhouse and never adapted to conditions there. Struggling from the beginning it produced only medium numbers of medium-textured sub-erect stems bearing few, soft leaves. Size was 15x36 cm. at maturity for this perennial, and essentially no growth took place beyond that time. The yellow flowers bloomed in May; two seeds were harvested in June.

Medicago orbiculatus (L.) Bart.

PI-346008 from Norway was a solitary annual with good cover potential. It was grown in the greenhouse and produced abundant, fine, very prostrate stems and abundant, soft leaves. By the fourth month it was 6x120 cm. in size, during the bloom of small yellow flowers. Maturity occurred in the fifth and sixth months. Good potential.

Medicago turbinata (L.) All.

PI-346009 was also a Norwegian accession, and like Medicago orbiculatus produced a good, dense cover in the greenhouse. The abundant stems and large, soft leaves produced a good cover with prostrate growth habit. It bloomed during the fourth month, and matured in the sixth month at a size of 10x130 cm. Being an annual, it died shortly thereafter.

Medicago sativa L.

PI-369353 from Tunisia was variable in vigor. There are better alfalfas than this one. This accession had medium numbers of stems and leaves. The mature size was 40x80 cm. in August. The fair vigor and forage production relegates this accession to the lower ranks of alfalfas in the Beltsville area. Field B₃.

LEGUMES AND OTHERS

Melilotus hirsuta Lipsky

PI-325421 from the USSR suffered from heavy grazing by the deer and some leafhopper damage. The heat eventually killed the weakened plants. The perennial did show potential for colder climates in that it produced good forage here during the cool months of its first year.

The medium amount of leaves and stems were medium and soft in texture. The mature size of 50x60 cm. was noted in June and July, following the bloom of yellow flowers in early June. Field G.

Melilotus indica (L.) All.

PI-292801 from Sweden was very unhappy here. It had poor vigor and only produced few stems and very few leaves. This annual bloomed prematurely in early June and was dead in July. It should be evaluated in a cooler climate. Field G.

PI-346010 from Spain via Norway was ill-suited to the heat. This annual produced only sparse growth, very few, fine, erect stems and few, soft, cauline leaves. By maturity in July the plants were 35x10 cm. in size. The leaves had dropped in June during bloom. An annual species to try in cooler climates. Field B₃.

Melilotus officinalis (L.) Lam.

Six accessions from the USSR were grown at the NPMC. All but one died in the heat of the second summer, and since M. officinalis is a biennial, the identity of the one survivor is questioned.

<u>PI</u>	<u>Habit</u>	<u>Stems</u>	<u>Leaves</u>	<u>Size (cm.)</u>	<u>Vigor</u>	<u>Field, Maturity, and Notes</u>
325422	Bi-Sol.	F,M,E	M,M,C	40x35 cm.	Poor	Field B ₃ . Matured ² July Poor accession, grazed.
325423	Bi-Sol.	M,M,SE	F,S,C	13x70 cm.	Fair	Field Hickory. Matured-September. Grazed hard.
325424	Bi-Sol.	M,C,SE	M-A,S,C	45x80 cm.	Fair. Good	Field B ₃ . Matured ² August. Leafhopper damage.
325425	Bi-Sol.	MA,M,SE	F,S,C	37x41 cm.	Fair	Field Ic. Did not mature. Grazed, poor.

LEGUMES AND OTHERS

Melilotus officinalis (L.) Lam. (cont'd)

<u>PI</u>	<u>Habit</u>	<u>Stems</u>	<u>Leaves</u>	<u>Size (cm.)</u>	<u>Vigor</u>	<u>Field, Maturity, and Notes</u>
325426	Bi-Sol.	M,F,SE	M,S,C	70x80 cm.	Good	Field B. Matured ³ August. Open; identity questioned.
325427	Bi-Sol.	M,M,SE	M,S,C	80x60 cm.	Fair	Field G. Did not mature. Grazed.

The data given above is for the second year. In general, the first year forage was better, however, the notes were incomplete.

Melilotus taurica (Bieb.) Seringe

Three Russian accessions were grown. All were biennial and all failed to mature in the first year. Notes are of the second year.

<u>PI</u>	<u>Stems</u>	<u>Leaves</u>	<u>Size (cm.)</u>	<u>Vigor</u>	<u>Maturity</u>	<u>Field and Notes</u>
325428	M,M,E	F,S,C	40x31 cm.	Poor	August	Field Ic. Grazed hard. Open even first year.
325429	F,F,E	F,S,C	15x35 cm.	Poor	Did not.	Field Hickory. Poor here.
325430	F,M,SE	F,S,C	55x55 cm.	Fair. Good	July	Field Ic. Too open. Grazed.

Rhododendron mucronulatum Turcz.

A deciduous shrub, 1 to 2 m. high. Leaves 3 to 7 cm. long by 1 to 2.5 cm. wide. Flowers solitary, 4 to 5 cm. across and rose-purple. Native to Korea, China and Japan.

Two accessions from Korea were grown at the NPMC. Both had multiple stems and erect habit.

PI-317378 had good vigor and growth. No apparent winter or summer injury. Flowered in mid-April with dark lavender flowers.

PI-317379 had growth and vigor similar to 317378. The only apparent difference is this accession had more flowers and a light lavender color. Both accessions are now in the NPMC landscape.

LEGUMES AND OTHERS

Rhododendron sinense Sweet

A shrub to 5 feet, with the young branches pubescent. Winter buds grayish and pubescent; the flowers are yellow, spotted greenish on the upper lobe. Native to China where it blooms in April and May in many flowered heads.

PI-159034 from China could not withstand the heat of the Beltsville area. Over the course of two growing seasons, it slowly died. Sources indicate that this species is hardy in zone 3, however.

The plants had erect habit with both single and multiple stems. The leaves were very reddish in color. Plant size was 25x10 cm. when mortality occurred.

Salvia hispanica L.

This annual was grown in the greenhouse and outside. BN-19653-69 from Mexico had few stems with a coarse, square cross section and erect growth. The leaves were medium in number, soft and well distributed. The maximum size in the outside planting (which did not mature) was 180x90 cm., while the greenhouse plants were smaller. The indoor plants bloomed after 7 months, with purple, lespedeza-like flowers. The potential use for this accession appears to be ornamental. Field G.

Sanguisorba canadensis L.

American burnet

American burnet is a perennial herb with thick rhizomes and tall erect stems to 6 feet. Native to North America and is found in marshes, wet meadows and prairies.

PI-346026 from Norway produced excellent cover at the NPMC. The forage produced was rated excellent until maturity in August when some dieback occurred. The medium numbers of coarse stems might affect forage value, but the leaves were abundant and soft. The maximum size attained was 100x60 cm. in early July. The deer liked it. Field B₃.

Sanguisorba hybrida (L.) Nordburg

An erect herb with branched flowering stems to 80 cm. Compact flowers in lax panicles. Found along rivers and woods ranging on the western half of the Iberian Peninsula.

PI-297949 from Portugal had a solitary, branching habit. The stems were coarse and erect to sub-erect. The mostly basal leaves were abundant and soft, with a rosette pattern. At maturity in September the size was noted at 61-23x61 cm. This perennial died shortly after sprouting new leaves in the second year. Field Hickory.

LEGUMES AND OTHERS

Sanguisorba minor Scop.

PI-346027 from Norway grew very dense, prostrate cover 25x50 cm. in its first year. Abundant leaves and stems with soft and medium texture were produced. The accession bloomed in May and matured in June and July, but only in the second growing season. The vigor of this accession declined in the second year, and it was dead by September. Field B₃.

Sanguisorba minor ssp. magnolii (Spach) Brig.

PI-346028 from Spain produced small but dense cover in May or the first growing season. The stems were abundant, fine and sub-erect to prostrate. The leaves were abundant, soft and cauline. The plant of this accession had red flowers and began to set seed in May at a size of 5x13 cm. The seed shattered when green and more was set in July and August. By October the deer had eaten the plants down to the ground level and the remaining vigor was lost - winterkill was observed the following spring. Field B₃.

Sanguisorba muricata (Spach) Ashers. & Graebn.

PI-297961 rapidly lost vigor after planting at Beltsville. This accession from Portugal failed to mature, then winterkilled. It had fine, prostrate stems and abundant, soft leaves. In September the size was 15x35 cm. Field B₃.

Sanguisorba tenuifolia Fisch. ex Link.

This perennial herb is native to the eastern USSR, where it is found in wet meadows. It grows 1 to 2 m. high and is eaten by cattle in small amounts.

PI-346030 from Norway had medium numbers of very coarse, erect stems, and moderately abundant soft cauline leaves. At the end of bloom in mid-July the size was 83x60 cm. Deer seemed to prefer this accession, and never permitted good density to develop. Field G.

Sanguisorba sp.

PI-297959 from Spain produced good cover during the heat of August, but was not hardy here. Medium numbers of coarse, sub-erect stems and abundant soft leaves were observed on this accession. The mature size was 38x33 cm. in September. Both vigor and forage quantity were rated good. Field B₃.

LEGUMES AND OTHERS

Tagetes erecta L.

African marigold

A hardy annual about 2 feet in height. Flowers of one solid lemon-yellow color. The foliage very strong scented. The following solitary annuals were compared at Beltsville:

<u>PI</u>	<u>Stems</u>	<u>Leaves</u>	<u>Size (cm.)</u>	<u>Bloom</u>	<u>Field and Notes</u>
350689	F,C,E	M,S,C	50x34 cm.	July to November	Field B ₃ . Not uniform or compact, rangy.
350690 'Cupido'	M,C,E	M,S,C	80x50	July to November	Field Ic. Abundant large showy flowers, coarse accession.
350691 'Julisonne'	M-F,C-M,E	M,S,C	75x30	July to September	Field K. Most variable accession.
350692 'Schwelblite'	M,C,E	M,S,C	55x40	July to August	Field Ic. Shortest bloom duration.

Tagetes lucida Cav.

Sweet-scented marigold

A tender perennial with leaves sessile and small flowers in dense terminal corymbs. Flowers have more agreeable odor than most other marigolds.

PI-350693 was a solitary annual from the Netherlands with abundant, fine, erect stems and moderately abundant soft cauline leaves. Plants were variable in size but averaged 35x35 cm. Bloomed June to September. Field UP.

Tagetes minuta L.

Muster John Henry

Introduced from South America, Tagetes minuta is an annual 0.4 to 1 m. high with flowers in dense corymbs and lemon colored.

PI-350694 from the Netherlands was a solitary annual that attained the size of 120x90 cm., hardly living up to its species name. Stems were medium in abundance, coarse and erect. Leaves were moderately abundant, soft, cauline and well distributed. Bloomed July to November. A very coarse accession. Field Ic.

LEGUMES AND OTHERS

Tagetes patula L.

French marigold

A hardy annual about 1 foot high, and branched near the base. Flowers in single or double and ranging from yellow to red. The following solitary annuals were received from the Netherlands:

<u>PI</u>	<u>Stems</u>	<u>Leaves</u>	<u>Size (cm.)</u>	<u>Bloom</u>	<u>Field and Notes</u>
350695	F,M,E	M,S,C,WD	55x50	May to October	Field Ic. Variable accession.
350696					
'Ehrenkreutz'	F,M,E	M,S,C	40x70	May to October	Field B ₃ . Dense accession.
350697	F,M,E	M,S,C,WD	25x20	May to	Field G. Dense hemispherical accession.
'Nana Bronze'					
350698	A,C,E-SE	A,S,C	48x50	May to October	Field G. Very dense, abundant flowers - one of the best accessions.
'Orange Koningin'					

Tagetes tenuifolia Cav.

An annual to 2 feet with solitary flowers that are yellow and 1 inch in diameter. Native to Mexico.

PI-350699, a solitary annual from the Netherlands was a good accession, being fairly dense and compact with a slight variation among plants. Stems were moderately abundant, fine and erect. Leaves were fine, moderately abundant, soft, cauline and well distributed. Mature size was 40x65 cm. Bloomed June to September. Field Ic.

'Ursula' PI-350700, also from the Netherlands, was a compact, dense accession with abundant flowers. Stems were abundant, medium-textured and erect. Leaves were medium in abundance, soft, cauline, and well distributed. Mature size was 25x25 cm. and it bloomed June to September. Field G.

Tetragonolobus siliquosus (L.) Roth

PI-311474 was a rhizomatous, Spanish accession that did not mature at Beltsville in two growing seasons. The stems were medium in numbers and texture with a sub-erect habit. The soft leaves were cauline, well distributed, and moderate in number. The size in May was 16x35 cm. with little growth thereafter. Field G.

LEGUMES AND OTHERS

Trifolium ambiguum Bieb.

BN-4529 from New Mexico performed poorly at Beltsville as the result of continuous grazing by deer. Stems were few, medium in texture, and sub-erect; leaves were few, soft and cauline. Bloomed June and matured in July. Spring recovery was early. Field Ic.

Trifolium baccarini Chiov.

An annual clover with a creeping habit, flowers very small. Roots at nodes. Native to Kenya where it is a valuable forage.

PI-262233 from East Africa performed poorly at Beltsville reaching a size of 5x18 cm. Poor performance may have been due to poor inoculation. Stems were few, fine and sub-erect. Leaves were medium in abundance, soft and cauline. This accession never matured. Field G.

Trifolium badium Schreb.

Brown clover

A perennial clover to 20 cm. high. The flowers are yellow, in large heads with a long stem. Indigneous to south Europe above 1800 m. Good forage.

PI-346036 from Norway had moderately abundant fine stems that were erect to sub-erect in habit. Leaves were medium in abundance, soft and cauline. Mature size in July was 19-10x12 cm. This accession was grown under greenhouse culture.

Trifolium campestre Schreb.

An annual from the Mediterranean region. Found in waste places, roadsides, pastures and dry situations in New Zealand.

PI-346037 from Madeira was grown under greenhouse culture and reidentification is pending. This accession produced a very low, dense cover of only 7 cm. in height. Stems were abundant, fine and spreading. Leaves were abundant, soft, cauline and well distributed. Spread from one plant was 20 cm.

Trifolium diffusum Ehrh.

An ascending or erect annual 20 to 25 cm. in height. Inflorescence globose 1.5 to 2.0 cm. in diameter. Found in forests, clearings, meadows from 700 to 1750 m. in altitude. Southern and central Europe and southern U.S.S.R.

BN-16305 received from the University of Kentucky was a dense accession with abundant, fine, erect stems and abundant, soft, cauline leaves. Bloomed May and June in the greenhouse and matured in July.

LEGUMES AND OTHERS

Trifolium fragiferum L.

PI-227255-B received from NE-9 was a very low, dense accession with abundant, fine, sub-erect stems and abundant, soft, cauline leaves. Mature size was restricted by cultivation at 15x60 cm. Bloomed June and July and matured in August. Spring recovery was early and abundant at Beltsville. Field B₃.

PI-297985 was a fairly dense accession, but coverage was spotty due to winter damage. It was also subject to moderate leafhopper damage. Stems were abundant, medium to fine in texture, and prostrate. Leaves were abundant, soft, cauline and well distributed. Bloomed June and July and matured in August. Perennial. Field B₃.

PI-231086 from Turkey was very vigorous until August when it suffered some drought injury. It is also quite susceptible to leafhopper injury. Otherwise it formed a dense mat 20x70 cm. with abundant, fine, sub-erect and prostrate stems and abundant, soft, cauline, well distributed leaves. Spring recovery was early and abundant. Bloomed June through August and matured in September. Perennial. Field B₃.

Trifolium hirtum All.

The following solitary annuals, all from Turkey, were compared under greenhouse culture.

<u>PI</u>	<u>Stems</u>	<u>Leaves</u>	<u>Size (cm.)</u>	<u>Bloom</u>	<u>Notes</u>
120079AQ	VA,M-F,P	VA,S,C	25x90	April to June	Excellent, low growing accession, uniform and dense.
120122Q	VA,M,P	A,S,C,WD	18x96	April to June	Excellent, low and dense, good cover.
120130Q	VA,M-F,P	VA,S,C	18x100	April to June	Excellent, low and dense, good cover.
120130AQ	A,M-F,P	VA,S,C,WD	10x77	April to June	Excellent, low and dense, good cover.
120137Q	M,M-F,SE-P	M,S,C	26x70	April to June	Good accession.
120146Q	M,M,M	M,S,C	30x91	April to June	Open habit.
120162	A,M,SE-P	M,S,C	20x70	May to June	
120179Q	VA,M,SE	A,S,C	25x70	March to June	Compact, dense, sub-erect accession.

LEGUMES AND OTHERS

Trifolium hirtum All. (cont'd)

<u>PI</u>	<u>Stems</u>	<u>Leaves</u>	<u>Size (cm.)</u>	<u>Bloom</u>	<u>Notes</u>
120188	M,M,SE	A,S,C	25x100	April to June	
120198Q	M,C-M,SE	M,S,C	23x80	April to June	Dense in center, open around perimeter.
120248	VA,M-F,SE	A,S,C	36x85	March to June	Excellent cover, most uniform of the tallest accessions.
121232	A,M-F,SE-P	A,S,C	27x85	April to June	Leaves very small - smaller than others.
121232BQ	M,M,SE-P	M,S,C	30x85	March to July	Fair cover.
121247AQ	VA,M-F,SE	M,S,C	32x80	March to June	Fair cover, somewhat stemmy.

Trifolium hybridum L. '4X'

PI-290730 from England had moderately abundant, sub-erect, medium to coarse textured stems and moderately abundant, soft, well distributed cauline leaves. Bloomed June to August and matured in September. Mature size was 20-12x40 cm. This accession performed poorly during the summer at Beltsville. Field G.

Trifolium incarnatum L.

The following were all solitary annuals:

<u>PI</u>	<u>Origin</u>	<u>Stems</u>	<u>Leaves</u>	<u>Size (cm.)</u>	<u>Field and Notes</u>
BN-6073 'Reseeding Crimson'	Alabama	M-F,M,E	A,S,C,WD	54x45	Bloomed May to June. Poor accession in greenhouse moderate leaf disease.
284282	Hungary	M,M,E	M,S,C,WD	46x25	Bloomed June.
284284	Turkey	A,C-M,E-SE	M,S,C	35x40	Bloomed June to July. Light insect damage.
290734	England	M,F,E	M,S,C	22x20	Bloomed July. Severe drought damage.
346040	Norway	M,M,E	M,S,C,WD	42x30	Bloomed June.

LEGUMES AND OTHERS

Trifolium lupinaster L.

A perennial clover with turnip-shaped roots. The stems are mostly erect or rising from a procumbent base. Not high-yielding but winter-hardy. Far-eastern U.S.S.R.

PI-319829 from Norway had a medium amount of medium to fine-textured, erect stems and a medium amount of soft, cauline leaves. Mature size was 15x17 cm. when it bloomed in July. This accession died during the heat of the summer at this location. CF.

Trifolium montanum L.

An erect, perennial clover with pubescent stems 20 to 40 cm. high. Dense and leafy, native to Europe and western Asia.

PI-255394 from Yugoslavia performed very poorly during the Beltsville summer leaving only one plant alive. Stems were few, medium-textured, and sub-erect. Leaves were medium in abundance, soft, and cauline. Mature size was 20x30 cm. Bloomed in May but never set seed. Field G.

Trifolium neglectum C. A. Mey.

PI-325500 from Russia was a low growing accession of non-uniform spread. Stems were medium in number, fine and sub-erect to prostrate in habit. Leaves were abundant, soft and cauline. Mature size was 10x85 cm. and moderate. Susceptable to leafhoppers and leaf disease was noted. Bloomed June and July, matured in August. Field Ic.

Very similar to Trifolium fragiferum in flowering and vegetative stages. Occurs on moist salt pans, rivers and creek banks in arid areas. Native to southwest U.S.S.R. and Iran.

Trifolium palaestinum Boiss.

A pubescent, branching annual with oblong leaflets. It is found in sandy places of Lebanon and Israel.

PI-233279 from Israel requires almost droughty conditions in order to perform well. Under dry greenhouse conditions this accession produced moderately abundant, medium-textured, sub-erect stems and a moderately abundant number of soft, cauline leaves. Mature size was 18x27 cm. Bloomed March to May and matured April to June.

Trifolium pilulare Boiss.

A pubescent annual with a spreading habit. Most of the white flowers are sterile. On stony hills and shady places of Asia Minor and Syria.

PI-233280 from Israel was a dense, low, solitary annual that reached the size of 10x80 cm. at maturity. Stems were abundant, fine and prostrate, and leaves were abundant, soft, cauline, and well distributed. Bloomed March and April in the greenhouse and matured in April and May.

LEGUMES AND OTHERS

Trifolium purpureum Loisel

PI-346050 produced abundant, medium textured, prostrate stems and a moderate amount of medium-harsh, cauline leaves. It bloomed from April to June, and matured in mid June. The mature size was 40-20x85 cm. This accession did not provide much soil cover.

Trifolium repens L.

PI-311495 from Spain was a low, dense accession that suffered some winter damage at this location. Its vigor and stoloniferous habit allowed it to completely recover by July however. Stems were abundant, fine and sub-erect to prostrate. Leaves were abundant, soft, cauline and well distributed. Bloomed May and June and matured June to July. Mature size was 20-16x80 cm. A very good accession. Field Ic.

Trifolium resupinatum L.

Persian clover

Annual to biennial with procumbent stems and flowers. Pink to violet color; mature calyx bladder-like. Native to grassy, sandy places (often saline) in Asia Minor, North Africa and the Mediterranean.

PI-346048 from Norway was moderately susceptible to spider mites and aphids under greenhouse culture. This solitary annual had a medium amount of coarse, sub-erect stems and few, soft, cauline leaves. Mature stem length was up to 100 cm. Bloomed February to June.

Trifolium rubens L.

PI-314123 from the U.S.S.R. had a medium amount of coarse, erect stems and a medium amount of moderately harsh, cauline leaves. Mature size was 30x20 cm. This accession was partially damaged by heat and/or drought during the summer at this location. Bloomed June and July and matured in August. Field Ic.

Trifolium rueppellianum Fresen.

PI-262237 from Kenya was grown under greenhouse culture at Beltsville. Owing to poor inoculation of this species, its performance was not outstanding. Stems were few to medium in number, medium in texture, and sub-erect to prostrate in habit. Leaves were medium in number, soft and cauline. Bloomed March to July but did not set seed until June. Mature size was 25x65 cm. Solitary annual.

PI-319491 from Tanzania also suffered from poor inoculation. Stems were moderately abundant, fine and sub-erect to prostrate in habit. Leaves were medium in number, soft and cauline. Mature size was 17x58 cm. Bloomed March to July and set seed from June to August. It was slightly susceptible to white flies and spider mites in the greenhouse. Solitary annual.

LEGUMES AND OTHERS

Trifolium stellatum L.

starry clover

A soft, hairy annual clover that occurs in the dry, rocky limestone slopes of southwestern Europe and Asia Minor.

PI-346049 a solitary annual originally from France produced a moderate amount of fine sub-erect to prostrate stems and abundant soft well-distributed cauline leaves. Mature size was 10x75 cm. with the densest portion being the 20 cm. radius about the crown. The entire plant was pubescent. Bloomed May and June and matured in June and July. This accession was moderately susceptible to shattering.

Trifolium sp.

PI-234411 from Kenya had abundant, medium textured, sub-erect to prostrate stems and few, soft cauline leaves. Bloomed April to June and matured in June and July at a size of 16x80 cm. in the greenhouse. Solitary annual.

Veronica serpyllifolia L.

Thyme-leaves speedwell

Much branched at the creeping base, nearly smooth, branches simple. Flowers whitish to pale blue with deeper stripes. Grassy areas, roadsides, etc. of northern America.

PI-346069 performed well at Beltsville during the summer, especially for a Norwegian accession. Leaves were abundant soft and basal, providing an excellent dense cover. The accession died before maturity. Field NGC.

Vicia amurensis Oett.

A perennial vetch with stems 80-150 cm. long. Blooms July to September in the hills and low mountains of Korea, Japan, Manchuria and Amur.

BN-19188 was a solitary perennial with a moderate amount of medium textured, sub-erect to prostrate stems and moderately abundant, soft, well distributed cauline leaves. Vines reached 48 cm. in length. This accession was susceptible to heat and/or drought damage during July and August at this location and was dead by the end of the summer. Field B₃.

Vicia assyriaca Boiss.

PI-369354 was a solitary annual with a moderate amount of medium-textured, prostrate stems and few, soft, cauline leaves. Vines reached 91 cm. The accession was moderately susceptible to spider mites and aphid infestation in the greenhouse. Bloomed May and June and matured in July.

LEGUMES AND OTHERS

Vicia biennis L.

An annual vetch 30-150 cm. in height. The white corolla has a violet tip and veins. The legume is brown, glabrous and contains 4-6 seeds. Native from Hungary to western Kazakhstan.

BN-19189 from the U.S.S.R. was a solitary rosette that spread to 66 cm. with a height of 30 cm. Stems were medium in number and texture and were prostrate. Leaves were moderately abundant, soft, cauline and well distributed. This accession bloomed and matured in July and was dead by August. It was extremely susceptible to leafhopper damage. Field B₃.

Vicia cracca L.

Boreal vetch

BN-19332 from Turkey was a solitary accession of low vigor at Beltsville producing a moderate amount of very fine prostrate vines with medium to few soft, cauline leaves. Size was 14x50 cm. and spring recovery was late. This accession did poorly during the heat of the summer and died during its second growing season. Circumpolar. Found in Newfoundland south to Virginia. Field G.

Vicia grandiflora Scop.

PI-351081, a solitary annual from France, demonstrated good vigor under greenhouse culture reaching a size of 12x140 cm. Stems were moderately abundant, medium to fine in texture, and sub-erect to prostrate in habit. Leaves were abundant, soft, well distributed and cauline. Density of forage was greatest around the crown and the accession was slightly susceptible to spider mites. Bloomed March to June with whitish-yellow flowers and matured May to July with no shattering of seed.

Vicia grandiflora v. kitaibeliana Koch.

Bigflower vetch

PI-351082 from France was a solitary annual that reached a size of 20x200 cm. under greenhouse culture, where it was slightly susceptible to spider mite damage. It produced moderately abundant, fine, prostrate stems and moderately abundant, soft, well distributed cauline leaves. It bloomed March to July with whitish-yellow flowers and matured March to August with no shattering. Quantity of forage was good with the greatest density near the crown.

Introduced from eastern Europe and Asia Minor. Naturalized along roadsides in southeast United States.

Vicia hirsuta (L.) S.F. Gray

PI-346057 was a solitary annual from Madeira that produced abundant, fine, sub-erect to prostrate stems and a moderate amount of soft, well distributed, cauline leaves. Mature size was 23x126 cm. and the quantity of forage produced was fair to poor. Bloomed March to April with small white flowers and matured in June with excessive shattering.

LEGUMES AND OTHERS

Vicia hybrida L.

Hairy yellow vetch

BN-19209 from Hungary was a solitary annual of poor vigor and forage value. Stems were few, medium in texture and sub-erect to prostrate in habit. Leaves were few, basal and cauline. Mature size was 8x56 cm. Bloomed February to April in the greenhouse and matured in April and May with excessive shattering.

Vicia neglecta Hanelt & Mettin

An annual vetch found in Turkey, which has glabrescent leaves. The stipules are shorter than the petioles.

BN-19197 produced abundant, medium to fine textured, prostrate vines and abundant, soft, cauline leaves. Mature size was 30x76 cm. and it bloomed April to July with blue and white flowers and set seed from May to July. It was susceptible to spider mite and white fly damage under greenhouse culture and acted like an annual, dying in late July.

Vicia noeana Boiss. & Reut.

An annual vetch with leaves to 10 cm. in groups of 5-7. The subsessile flowers are 1.7-2.4 cm. long and blue to violet, infrequently greenish. Found in cultivated and fallow fields of Turkey, Syria, Iraq and Iran.

BN-19337 from Turkey was a solitary annual with abundant, fine, sub-erect to prostrate stems and small, abundant, soft, well distributed cauline leaves. Mature size of this dense mass was 13x60 cm. The accession was slightly susceptible to aphid damage and bloomed March to May in the greenhouse with brownish-white flowers. It matured in June with poor seed quantity, but no shattering.

BN-19338, also from Turkey, was a solitary annual producing abundant, medium to fine-textured stems that ranged from erect to prostrate in habit. Leaves were moderately abundant, soft, cauline, well distributed and more narrow than BN-19338, which produced more cover. Bloomed March to May with white flowers and matured June to August reaching the size of 26x50 cm. No shattering was noted.

Vicia peregrina L.

A climbing vetch with solitary flowers and marbled seeds. Annual.

PI-317185 was an annual from the U.S.S.R. The abundant, fine, sub-erect stems and moderately abundant, soft, cauline leaves produced fair cover and forage. This accession matured in the greenhouse during June and July with a good seed crop reported.

LEGUMES AND OTHERS

Vicia peregrina L. (cont'd)

BN-19341 is mistakenly identified as Vicia. It is actually a Lathyrus awaiting official reidentification. Stems were medium in abundance, winged, fine-textured and sub-erect to prostrate in habit. Leaves were medium to few in quantity, soft and cauline. This solitary annual reached 20x47 cm. at maturity in June and July in the greenhouse. The salmon colored blooms occurred from April to May. No shattering was noted.

Vicia sativa L.

Common vetch

PI-314504 from the U.S.S.R. was a solitary annual. The stems were medium in number and prostrate bearing soft abundant leaves. By the sixth month in the greenhouse, the plants had matured and were 20x220 cm. in size. Vigor and forage were rated good.

BN-19342 from Turkey was a solitary annual with abundant coarse, sub-erect to prostrate vines to 152 cm. Leaves were abundant, soft, cauline and well distributed. The accession was slightly susceptible to spider mite damage under greenhouse culture where it bloomed in May to June with lavender flowers. Maturity ranged from June to July with no shattering.

BN-19343 from Spain, a solitary annual, produced a moderate amount of fine, sub-erect, stems and a medium amount of soft cauline leaves. It bloomed April to June with reddish-purple flowers in the greenhouse and matured June to July with no shattering. This accession was more open than BN-19342.

Vicia semiglabra ssp. caucasica (Repr. ex Boiss.)

Vicia semiglabra is found in the Caucasus Mountains between 2400 and 5300 feet elevation. It is a perennial with 10-12 leaflets per leaf and 10-12 flowers per raceme.

BN-19201 was a solitary perennial that formed a rosette pattern from the crown. Stems were medium in abundance, fine and sub-erect to prostrate in habit. Leaves were medium to few in quantity, soft and cauline. Under greenhouse culture it bloomed in January and June but set no seed. Size at maturity was 30x80 cm. This was a fairly open accession with little potential. Extremely susceptible to aphid and white fly infestation.

Vicia sylvatica L.

A perennial vetch 60-200 cm. tall, usually glabrous. The racemes are 5 to 20 flowers. The flowers are colored white with purple veins. The black, glabrous legume is 25-30x5-10 mm. Found in central and eastern Europe south to Italy.

LEGUMES AND OTHERS

Vicia sylvatica L. (cont'd)

PI-346070 was a slowly rhizomatous perennial from Norway. It produced a moderate amount of fine, sub-erect to prostrate stems and an abundant amount of soft, well distributed, cauline leaves. Size at maturity was 120x25 cm. This accession was slightly susceptible to spider mites and powdery mildew. It never bloomed and succumbed to the summer heat in the greenhouse in August.

Vicia tenuifolia Roth

Bramble vetch

BN-19345 from Turkey was a poor groundcover at Beltsville. The medium numbers of fine, sub-erect branches and medium numbers of soft leaves provided sparse cover at a size of 40x60 cm. in June. The plants were mature by mid-July. Field G.

Vicia tetrasperma (L.) Moench

Sparrow vetch

This native accession, BN-17700 provided good, dense cover and a good seed crop in the greenhouse. An annual, it produced abundant, fine, sub-erect, prostrate stems and abundant soft leaves. The pale blue flowers appeared in June; maturity occurred in July and August.

Vicia villosa Roth.

Hairy vetch

Three annuals with sub-erect to prostrate habit were grown in the greenhouse in 1971. BN-19348 was by far the best cover producer.

<u>PI</u>	<u>Origin</u>	<u>Stems</u>	<u>Leaves</u>	<u>Size (cm.)</u>	<u>Maturity</u>	<u>Vigor</u>	<u>Notes</u>
250796	Afghan	F,M,SE	M,S,C	18x145	June	Good	Not very dense.
BN-19331	Turkey	A,M,SE	M,S,C	40x130	July	Good	Not very dense.
BN-19348	Turkey	A,F,P	A,S,C	20x200	June	Good	Good cover.

Vicia sp.

BN-19650 from Georgia was grown in the greenhouse. An annual with few stems and medium leaves, not having much conservation value. Maturity occurred in May and June at a size of 30x165 cm.

Vicia sp.

BN-19687 from Florida produced fairly good coverage in the greenhouse. The sub-erect stems were medium in numbers and texture. Medium numbers of soft leaves provided a fair amount of forage. A maximum size of 26x116 cm. was noted with maturity in April, the fifth month in the greenhouse. Though a good seed crop was set, excessive shattering occurred.

NOTES AND COMMENTS

GROUNDCOVERS

There are presently about 100 groundcover accessions growing at the National Plant Materials Center. The following information was extracted for the accessions having the most potential at the request of W. C. Young, Regional Plant Materials Specialist.

Achillea filipendulina

BN-12880

Flowers: Golden yellow, blooming in late June.
Foliage: Abundant, soft, well distributed leaves that are large for Achillea, very dense.
Habit: Erect to sub-erect, rhizomatous and vigorous, 29 inches
Propagation: Divisions, seed

Achillea millefolium Zone 2

BN-14534

Flowers: Pink and white in flat clusters, blooming in June.
Foliage: Feathery and finely divided, almost fernlike, aromatic when crushed, green.
Habit: Erect and rhizomatous with abundant stems and leaves. Prefers full sun and thrives in poor sandy soil.
Propagation: Divisions, seed

Ajuga reptans Zone 4

BN-10738

Flowers: Blue to purplish in compact, upright spikes, held rigidly above the low, broad rosette of leaves, abundant flowers are whorled about the stake.
Foliage: Leaves to 4 inches long, borne flat on ground.
Habit: Low and dense, a rapid cover on sandy soils with full sun, stoloniferous, blooms May and June. Withstands shade well.
Propagation: Divisions

Alyssum saxatile Zone 4

BN-19264

Flowers: Yellow, showy
Foliage: Gray-toned, durable; densest near base forming a rosette pattern.
Habit: Vigorous becoming a large sprawling mass when not restrained. Prefers full sun and sandy soil. Perennial.
Propagation: Divisions, cuttings, seed

Cerastium biebersteinii

BN-15044

Flowers: White, blooming in June
Foliage: Gray, much like C. tomentosa
Habit: Creeping mat-former, fairly dense, height 7 inches, lower than C. tomentosa and without as many showy flowers.
Propagation: Divisions, seed, cuttings

NOTES AND COMMENTS

GROUNDCOVERS

Cerastium tomentosum Zone 2

BN-12892

Flowers: White, 1/2 inch in diameter, blooming in early June.
Foliage: Grayish-wooly, leaves 3/4 inches long x 1/8 inches wide, evergreen, dense at base.
Habit: 15 inches tall with leaves densest near the base. Erect and spreading, a slow creeper. Herbaceous.
Propagation: Divisions, seed, cuttings

Cytisus decumbens Zone 5

BN-11042

Flowers: 1 to 3, bright yellow, 1 to 1.5 cm. long.
Foliage: Semi-evergreen with abundant small sessile oblong-obovate leaves.
Habit: Decumbent to prostrate shrub to 0.2 meters, spreading slowly by rooting branches; low and dense providing good cover, performing well in full sun or partial shade.
Propagation: Seed, cuttings

Helianthemum nummularium Zone 5 'Buttercup'

BN-12896

Flowers: Yellow, about 1 inch in diameter, blooming June and July.
Foliage: Evergreen to semi-evergreen under mild winter conditions. Leaves green to bluegreen.
Habit: Erect and spreading eventually forming a solid mat. Flowers are very abundant and quite showy. Prefers full sun.
Propagation: Cuttings

Hypericum calycinum Zone 6

BN-12900

Flowers: Solitary, bright yellow, 3 inches in diameter blooming July to August.
Foliage: Evergreen to semi-evergreen with opposite leaves to 4 inches in length. Leaves purplish in Autumn.
Habit: Rhizomatous and stoloniferous forming a solid cover to 12 inches in height. Performs best in sandy soil with full sun but will permit partial shade.
Propagation: Divisions, seed, cuttings

Hypericum rhodopaeum

BN-19287

Flowers: Large, showy yellow flowers blooming in June.
Foliage: Rather small, moderately abundant, well distributed, cauline leaves.
Habit: Sub-erect, fine, abundant stems, solitary but spreading prefers semi-shaded sites and slightly dry, sandy soil.
Propagation: Divisions, cuttings

NOTES AND COMMENTS

GROUNDCOVERS

Juniperus conferta 'Emerald Sea'

BN-18528

Foliage: Evergreen, needle-like whorles of three, single gray-green stripe on upper leaf surface.

Habit: Prostrate

Propagation: Cuttings, layers

A prostrate Juniper less than 12 inches in height from Japan, performing well on sandy sites. Available only in limited numbers. Fairly rapid, dense growth. Released as an ornamental and sand stabilizer.

Juniperus horizontalis Zone 2 'Wiltonii'

BN-19310

Foliage: Bluish-green evergreen, scale-like and sharply pointed.

Habit: Very prostrate (3 inches tall) and a fairly rapid spreader, producing runners that may tend to root where contact is made with the soil.

Propagation: Cuttings, layers

Prefers full sun and will perform well under city and dry conditions.

Liriope

Flowers: Small, 1/16 inch to 1/4 inch in diameter, light lilac to white in color that are borne on spikes slightly taller than the leaves. Blooms in July and August.

Foliage: Evergreen, grasslike and varying in width with species from 1/8 inch to 1/2 inch. Leaves turn pale green in winter.

Habit: A creeping mat former, providing year round erosion control. Usually restrained. Erect. Can be moved. Shade is preferred.

Propagation: Divisions, seed

BN-11062	Liriope cv 'Majestic'	8" tall	
BN-11063	Liriope cv 'Big Blue'	10" tall	coarse
BN-11067	Liriope cv 'Curley Twist'	8" tall	
BN-11064	Liriope muscari exiflora	10" tall	fairly coarse
BN-11065	Liriope muscari cv 'Munroi #1'	11" tall	coarse
BN-10762	Liriope graminifolia	15" tall	
BN-10763	Liriope graminifolia	13" tall	
BN-10764	Liriope graminifolia	8" tall	very fine leaves
BN-11069	Liriope cv 'Wonder Evergreen'	13" tall	fairly coarse

Narrowleaf types are the most rapid spreaders.

NOTES AND COMMENTS

GROUNDCOVERS

Potentilla tridentata Zone 2

BN-11030

- Flowers: White, 1/4 inch across blooming in mid to late May at Beltsville.
- Foliage: Dark green, glaucous, with three palmately arranged leaflets per leaf.
- Habit: Approximately 6 inches tall, dense prostrate in growth, and uniform.
- Propagation: Divisions, seed

Sasa pygmaea Zones 5 and 6

BN-1478

- Flowers: None observed.
- Foliage: Coarsely grasslike, leaves 3 inches to 6 inches long. Rich green in color.
- Habit: An extremely vigorous rhizomatous dwarf bamboo native to Japan. Must be confined in gardens and can easily become a weed. An extremely dense cover reaching 18 inches in height. Spreads rapidly in full sun on light soils. May want to use it at interchanges or where surrounded by concrete. Turns brown with first frost.
- Propagation: Divisions

Sedum aizoon

BN-14568

- Flowers: Yellow, blooming in June
- Foliage: Succulent leaves to 1 inch long and 1/2 inch wide, glabrous and evergreen under less severe winters than encountered at Beltsville.
- Habit: Forms a solid mat and plants tend to be fairly solitary, creeping slowly. Plants attain an attractive shape and reach 10 inches in height. Prefers full sun.
- Propagation: Divisions, cuttings, seed

Sedum ellacombianum

BN-15080

- Flowers: Small and yellow in flat heads.
- Foliage: Succulent, semi-evergreen with leaves to 1-1/4 inches in length.
- Habit: A solitary perennial forming a rich green vigorous spreading hemispherical mound in mid-summer.
- Propagation: Divisions, cuttings, seed

Sedum rupestre

BN-14573

- Foliage: Small fine, succulent leaves, blue-gray in color.
- Habit: Dense, creeping mat former preferring full sun and light soils.
- Propagation: Divisions, cuttings, seed

NOTES AND COMMENTS

GROUNDCOVERS

Sedum rupestre v. fosterianum

BN-12913

Foliage: Blue-green, succulent, slightly coarser than S. sexangulare.
Habit: Erect 3 inches to 3 inches and spreading mat former, dense, prefers full sun.
Propagation: Divisions, cuttings, seed

Sedum sexangulare

BN-12914

Flowers: Small and bright yellow blooming in early June at Beltsville.
Foliage: Evergreen, small and pointed, succulent about 3/16 inches long.
Habit: Low (5 inches) creeping mat former preferring full sun. Vigorous and must usually be restrained. Very attractive when blooming forming a solid yellow mat.
Propagation: Divisions, cuttings

Sedum spurium coccineum

BN-10885

Flowers: Pink to white, blooming July to August
Foliage: Pale grayish under good fertility to reddish under poor soil conditions. Leaves succulent and semi-evergreen with mild winters.
Habit: Creeping mat former to 1 inch in height, preferring full sun.
Propagation: Divisions, cuttings, seed

Thymus lanicaulis Zone 3

BN-11048

Flowers: Rose pink in small round heads, blooming June to September
Foliage: Leaves about 1/3 inches long and opposite, green.
Habit: Low creeping cover reaching about 4 inches in height, not as low or as versatile as T. serpyllum.
Propagation: Divisions

Thymus serpyllum Zone 3

BN-10886

Flowers: Small and purplish in small whorls on upright spikes blooming June to September.
Foliage: Evergreen with aromatic leaves.
Habit: Low, dense and herbaceous, rapid spreader to 5 inches in height.
Propagation: Divisions

Will withstand poor soil conditions and grows well in full sun or partial shade.

NOTES AND COMMENTS

GROUNDCOVERS

Veronica incana Zone 3 BN-10888

Flowers: Abundant bluish-purple flowers in slender, terminal spikes blooming in early June.
Foliage: Gray with opposite leaves.
Habit: Erect and spreading. Grows well in full sun on heavy and light soils.
Propagation: Divisions

Veronica incana Zone 3 BN-19460

Same as above, but with green foliage.

Veronica teucrium BN-14580

Flowers: Bright purplish-blue, blooming late May and early June.
Foliage: Dense with well distributed cauline leaves.
Habit: Erect, semi-herbaceous, 15 inches to 20 inches in height. Slowly rhizomatous.
Propagation: Divisions, cuttings

Xanthorrhiza simplissima Zone 2 BN-8610

Flowers: Occurring before the leaves, inconspicuous, brownish-purple in racemes, blooming in early May.
Foliage: Leaves 1 inch to 3 inches long, toothed, alternate and compound, orange colored in Autumn.
Habit: Uniform and freely spreading in light moist soils by rhizomes. Plants are single stemmed without side branching. Bark and roots are yellowish. Performs poorly in dry soils and will perform well in full sun or partial shade. Reaches 2 inches in height.
Propagation: Divisions, root cuttings, seed

SUMMARY OF REIDENTIFICATIONS - 1971

PI No.	BN No.	Original Identification	Reidentified as:
120159	9503	<i>Trifolium resupinatum</i> L.	<i>Trifolium</i> cf. <i>balansae</i> Boiss.
167259	14215	<i>Vicia sativa</i> L.	<i>Vicia villosa</i> Roth
170008	14219	<i>Vicia pannonica</i> Crantz	<i>Vicia villosa</i> Roth
170017	14211	<i>Vicia narbonensis</i> L.	<i>Vicia sativa</i> L.
173636	19917	<i>Bothriochloa intermedia</i> (R.Br.) A. Camus	<i>Bothriochloa ischaemum</i> (L.) Keng
174040	19918	<i>Bothriochloa intermedia</i> (R.Br.) A. Camus	<i>Bothriochloa ischaemum</i> (L.) Keng
174042	19919	<i>Bothriochloa intermedia</i> (R.Br.) A. Camus	<i>Bothriochloa ischaemum</i> v. <i>songarica</i> (Rupr.) Celarier & Harlan
176409	19920	<i>Bothriochloa intermedia</i> (R.Br.) A. Camus	<i>Bothriochloa ischaemum</i> (L.) Keng
201197	14092	<i>Vicia sativa</i> L.	<i>Vicia villosa</i> Roth
201882	8089	<i>Vicia sativa</i> L.	<i>Vicia villosa</i> Roth
201883	8090	<i>Vicia sativa</i> L.	<i>Vicia villosa</i> Roth
206394	14255	<i>Vicia sativa</i> L.	<i>Vicia angustifolia</i> L.
206780	14170	<i>Vicia villosa</i> Roth	<i>Vicia sativa</i> L.
208915	19921	<i>Bothriochloa intermedia</i> (R.Br.) A. Camus	<i>Bothriochloa glabra</i> (Roxb.) A. Camus
209355	19922	<i>Bothriochloa intermedia</i> (R.Br.) A. Camus	<i>Bothriochloa insculpta</i> (Hochst.) A. Camus
212331	14040	<i>Vicia ervilia</i> (L.) Willd.	<i>Lathyrus</i> sp.
212332	14041	<i>Vicia ervilia</i> (L.) Willd.	<i>Lathyrus</i> sp.
212334	14043	<i>Vicia ervilia</i> (L.) Willd.	<i>Lathyrus</i> sp.
213857	19923	<i>Bothriochloa intermedia</i> (R.Br.) A. Camus	<i>Bothriochloa ischaemum</i> v. <i>songarica</i> (Rupr.) Celarier & Harlan
217969	14212	<i>Vicia narbonensis</i> L.	<i>Vicia angustifolia</i> L.
218060	19926	<i>Bothriochloa intermedia</i> (R.Br.) A. Camus	<i>Bothriochloa ischaemum</i> v. <i>songarica</i> (Rupr.) Celarier & Harlan
220880	14026	<i>Vicia atropurpurea</i> Desf.	<i>Vicia villosa</i> Roth
220881	14031	<i>Vicia dasycarpa</i> Ten.	<i>Vicia sativa</i> L.
220882	14032	<i>Vicia dasycarpa</i> Ten.	<i>Vicia sativa</i> L.
220896	14113	<i>Vicia sativa</i> L.	<i>Vicia angustifolia</i> L.
221514	14051	<i>Vicia ervilia</i> (L.) Willd.	<i>Lathyrus</i> sp.
222177	14033	<i>Vicia dasycarpa</i> Ten.	<i>Vicia villosa</i> Roth
222217	14183	<i>Vicia persica</i> Boiss.	<i>Vicia villosa</i> Roth
228301	14259	<i>Vicia sativa</i> L.	<i>Vicia angustifolia</i> L.
228305	14260	<i>Vicia sativa</i> L.	<i>Vicia angustifolia</i> L.

SUMMARY OF REIDENTIFICATIONS - 1971

PI No.	BN No.	Original Identification	Reidentified as:
229924	--	Agropyron lolioides (Karel. & Kir.) P.	Agropyron elongatiforme Drob.
230362	14261	Vicia sativa L.	Vicia angustifolia L.
232567	9127	Lotus sp.	Lotus purshianus (Benth.) Clements & Clements
234411	16286	Trifolium ruepellianum Fresn.	Trifolium sp.
234731	14208	Vicia lutea L.	Vicia sativa L.
238367	8809	Trifolium repens L.	Trifolium cf. balansae Boiss.
239164	19927	Bothriochloa intermedia (R.Br.) A. Camus	Bothriochloa glabra (Roxb.) A. Camus
240833	19931	Bothriochloa intermedia (R.Br.) A. Camus	Bothriochloa glabra (Roxb.) A. Camus
241496	19932	Bothriochloa intermedia (R.Br.) A. Camus	Bothriochloa glabra (Roxb.) A. Camus
241498	18566	Bothriochloa intermedia (R.Br.) A. Camus	Bothriochloa grahamii (Haines) Borr
244036	11395	Lotus corniculatus L.	Lotus corniculatus L. 'Sao Gabriel'
245727	19933	Bothriochloa intermedia (R.Br.) A. Camus	Bothriochloa ischaemum (L.) Keng
249878	14198	Vicia dasycarpa Ten.	Vicia villosa Roth
249883	14206	Vicia hirsuta (L.) S.F. Gray	Vicia sativa L.
251221	14079	Vicia lutea L.	Vicia sativa L.
251413	14074	Vicia ervilia (L.) Willd.	Lathyrus sativus L.
255398	10211	Vicia angustifolia L.	Vicia sativa L.
266194	19936	Bothriochloa intermedia (R.Br.) A. Camus	Bothriochloa glabra (Roxb.) A. Camus
271431	12082	Pinus sp.	Pinus halepensis Mill.
284201	13152	Phalaris aquatica L.	Phalaris arundinacea x Phalaris aquatica
285425	14648	Spiraea japonica v. himalaica Kitamura	Spiraea micrantha Hook. f.
297999	15256	Vicia benghalensis L.	Vicia villosa Roth
299895	18089	Dolichos gibbosus Thunb.	Vigna wilmsii Burt - Davy
300015	15505	Lotus strictus Fisch. & Mey.	Lotus corniculatus L.
310061	16628	Paspalum cromyorchizon Trin. ex Doell.	Paspalum nicorae Parodi
314211	17414	Agropyron praeaeapitosum Nevski	Agropyron ugamicum Drob.
314664	--	Elymus aralensis Regel	Elymus angustus Trin.
325184	18614	Agropyron lavrenkoanum Prokudin	Agropyron sibiricum (Willd.) Beauv.
325482	--	Trifolium alpestre L.	Trifolium pratense L.
325483	--	Trifolium alpestre L.	Trifolium medium Huds.
338627	19007	Agrostis stolonifera L.	Eragrostis curvula (Schrud.) Nees
344557	19260	Alopecurus pratensis L.	Phalaris arundinacea L.
344570	19272	Brachypodium ramosus Huds.	Bromus sp.
345995	19398	Hypericum polyphyllum Boiss. & Bal.	Hypericum perforatum L.

SUMMARY OF REIDENTIFICATION - 1971

PI No.	BN No.	Original Identification	Reidentified as:
345998	19401	<i>Hypericum tomentosum</i> L.	<i>Hypericum</i> sp.
346050	19453	<i>Trifolium stellatum</i> L.	<i>Trifolium purpureum</i> Loisel
349582	--	<i>Impatiens hawkeri</i> W. Bull.	<i>Impatiens</i> sp.
349583	--	<i>Impatiens hawkeri</i> W. Bull.	<i>Impatiens</i> sp.
349584	--	<i>Impatiens hawkeri</i> W. Bull.	<i>Impatiens herzogii</i> Schum.
349585	--	<i>Impatiens hawkeri</i> W. Bull.	<i>Impatiens</i> sp.
349586	--	<i>Impatiens hawkeri</i> W. Bull.	<i>Impatiens</i> sp.
354258	--	<i>Impatiens</i> sp.	<i>Impatiens schlechteri</i> Warb.
354259	--	<i>Impatiens</i> sp.	<i>Impatiens schlechteri</i> Warb.
354262	--	<i>Impatiens</i> sp.	<i>Impatiens schlechteri</i> Warb.
354263	--	<i>Impatiens</i> sp.	<i>Impatiens linearifolia</i> Warb.
354266	--	<i>Impatiens</i> sp.	<i>Impatiens linearifolia</i> Warb.
354267	--	<i>Impatiens</i> sp.	<i>Impatiens linearifolia</i> Warb.
354276	20407	<i>Pennisetum</i> sp.	<i>Pennisetum macrostachyum</i> (Brongn.) Trin.
361016	20411	<i>Arctotis venusta</i> L.	<i>Arctotis venusta</i> Norlindh
369351	19346	<i>Vicia</i> sp.	<i>Lathyrus aphaca</i> L.
369352	19347	<i>Vicia</i> sp.	<i>Lathyrus erectus</i> Lag.
369353	15869	<i>Medicago</i> sp.	<i>Medicago sativa</i> L.
369354	19329	<i>Vicia angustifolia</i> L.	<i>Vicia assyriaca</i> Boiss.
369355	19209	<i>Vicia</i> sp.	<i>Vicia hybrida</i> L.
369356	19348	<i>Vicia</i> sp.	<i>Vicia villosa</i> Roth
372426	18585	<i>Agropyron spicatum</i> (Pursh.) Scribn.	<i>Agropyron albicans</i> v. <i>griffithsii</i> (Scribn. & Sm. ex Piper) Beetle

CHANGES IN NOMENCLATURE

Original Name	New Name
Dolichos gibbosus Thunb.	Dolichos lignosus L.
Echinichloa crusgalli v. frumentaceae (Roxb.) W. F. Wight	Echinichloa frumentacea (Roxb.) Link
Medicago truncatula v. tribuloides (Desr.) Burnat	Medicago truncatula v. longispina Urb.
Onobrychis chorassanica Bunge	Onobrychis chorassanica Bunge ex Boiss.

Information compiled from Summaries No. 42, 43, 44 and 45, January through December 1971, from Plant Introduction Investigations, New Crop Research Branch, ARS.

National Plant Materials Center

Domestic Distribution of Seed in 1971

Genera	Number of Packets Distributed to:			
	North- east	Mid- east	South- east	West
Agropyron.....:				7
Ammophilla.....:				1
Amorpha.....:			4	
Argyrolobium.....:			1	
Arundinella.....:			8	
Astragalus.....:	4		1	2
Bothriochloa.....:				254
Brachiaria.....:			1	
Bromus.....:			22	2
Clitoria.....:			3	
Coronilla.....:	1			
Cynodon.....:	2			
Dactylis.....:				12
Datura.....:	1			
Desmodium.....:			13	
Echinochloa.....:			1	
Eleusine.....:			1	
Elymus.....:	8			3
Elyonurus.....:			5	
Entolasia.....:				1
Eragrostis.....:			12	
Festuca.....:			8	3
Hyoscyamus.....:	1			
Koleria.....:	1			
Lespedeza.....:	1		16	
Lithocarpus.....:			1	
Lotus.....:	2	2	2	2
Lupinus.....:			2	
Malus.....:			3	
Medicago.....:			1	
Melilotus.....:				1
Nicandra.....:	2			
Panicum.....:			55	3
Paspalum.....:				1
Phalaris.....:				3
Physochlaina.....:	1			
Poa.....:				15
Pueraria.....:			1	

National Plant Materials Center

Domestic Distribution of Seed in 1971

Genera	Number of Packets Distributed to:			
	North- east	Mid- east	South- east	West
Rhamnus.....:			2	
Robinia.....:				1
Setaria.....:				2
Solanum.....:	1			
Sorghastrum.....:	4			
Sorghum.....:				12
Spartina.....:			1	
Sporobolus.....:			4	
Stipa.....:			1	
Stylosanthes.....:			1	3
Trifolium.....:			4	2
Vicia.....:	8		14	39
TOTALS:	37	2	188	369

National Plant Materials Center

Domestic Distribution of Vegetative Material in 1971

BN No.	Species	Type and Amount of Material
20988	Acroceras macrum PI-364374	stolons
20989	Acroceras macrum PI-364375	stolons
20990	Acroceras macrum PI-364376	stolons
20991	Axonopus compressus PI-365101	stolons
20994	Brachiaria arrecta PI-364399	stolons
21002	Brachiaria dictyoneura PI-364608	stolons
20377	Brachiaria humidicola PI-362146	stolons
21005	Brachiaria humidicola PI-365104	stolons
20380	Brachiaria mutica PI-362147	stolons
20381	Brachiaria mutica PI-362148	stolons
20382	Brachiaria mutica PI-362149	stolons
21006	Brachiaria nigropedata PI-364411	stolons
21007	Brachylaena sp. PI-365497	stolons
21014	Chloris gayana PI-364452	stolons
21015	Chloris gayana PI-364453	stolons
22000	Crassula sp. PI-364999	stolons
21029	Cynodon plectostachyus PI-364692	stolons
21030	Cynodon plectostachyus PI-364493	stolons
21033	Cynodon plectostachyus PI-364495	stolons
21034	Cynodon plectostachyus PI-364496	stolons
21035	Cynodon plectostachyus PI-364497	stolons
21038	Cynodon plectostachyus PI-364500	stolons
21041	Digitaria didactyla PI-364519	stolons
21046	Digitaria milaniana PI-364530	stolons
21050	Digitaria milaniana PI-364534	stolons
21056	Digitaria milaniana PI-364540	stolons
21058	Digitaria milaniana PI-364542	stolons
21077	Digitaria natalensis PI-364563	stolons
21091	Digitaria pentzii PI-364576	stolons
21110	Digitaria pentzii PI-364595	stolons
21121	Digitaria pentzii PI-364606	stolons
21135	Digitaria pentzii PI-365115	stolons
21138	Digitaria pentzii v. stolonifera PI-364619	stolons
21145	Digitaria pentzii v. stolonifera PI-364626	stolons
21193	Digitaria valida PI-364673	stolons
21205	Digitaria valida PI-364685	stolons
21222	Digitaria valida PI-364702	stolons
21227	Digitaria valida PI-364707	stolons
21245	Digitaria valida PI-364725	stolons
21246	Digitaria valida PI-364726	stolons
21279	Digitaria valida PI-364759	stolons
21280	Digitaria valida PI-364760	stolons

National Plant Materials Center

Domestic Distribution of Vegetative Material in 1971

BN No.	Species	Type and Amount of Material
21286	Echinochloa pyramidalis PI-364798	stolons
21287	Eriochloa borumensis PI-364837	stolons
21289	Eriochloa borumensis PI-364839	stolons
21290	Eriochloa borumensis PI-364840	stolons
17493	Euonymus fortunei 'Longwood' PI-275073	2 plants
21292	Hemarthria altissima PI-364344	stolons
21293	Hemarthria altissima PI-364861	stolons
21294	Hemarthria altissima PI-364862	stolons
21296	Hemarthria altissima PI-364864	stolons
21297	Hemarthria altissima PI-364865	stolons
21298	Hemarthria altissima PI-364866	stolons
21299	Hemarthria altissima PI-364867	stolons
21300	Hemarthria altissima PI-364868	stolons
21301	Hemarthria altissima PI-364869	stolons
21302	Hemarthria altissima PI-364870	stolons
21304	Hemarthria altissima PI-364872	stolons
21305	Hemarthria altissima PI-364873	stolons
21307	Hemarthria altissima PI-364875	stolons
21308	Hemarthria altissima PI-364876	stolons
21309	Hemarthria altissima PI-364877	stolons
21310	Hemarthria altissima PI-364878	stolons
21311	Hemarthria altissima PI-364879	stolons
21312	Hemarthria altissima PI-364880	stolons
21313	Hemarthria altissima PI-364881	stolons
21314	Hemarthria altissima PI-364882	stolons
21318	Hemarthria altissima PI-364886	stolons
21319	Hemarthria altissima PI-364887	stolons
21321	Hemarthria altissima PI-364889	stolons
21323	Hemarthria altissima PI-364891	stolons
21325	Jasmine mesnezi PI-364927	stolons
20388	Juniperus ashei	16 plants
20389	Juniperus silicicola	50 plants
21326	Leersia hexandra PI-364346	stolons
21338	Panicum maximum PI-364963	stolons
21349	Paspalum commersonii PI-364977	stolons
21350	Paspalum commersonii PI-364978	stolons
21351	Paspalum commersonii PI-364979	stolons
21352	Paspalum commersonii PI-3649809	stolons
21353	Paspalum commersonii PI-365511	stolons
21354	Paspalum distichum PI-364981	stolons
21355	Paspalum distichum PI-364982	stolons
21356	Paspalum distichum PI-364983	stolons

National Plant Materials Center

Domestic Distribution of Vegetative Material in 1971

BN No.	Species	Type and Amount of Material
21358	Paspalum vaginatum PI-364368	stolons
21359	Paspalum vaginatum PI-364985	stolons
21360	Pennisetum clandestinum PI-364350	stolons
11030	Potentilla tridentata	150 plants
21365	Senecio tamoides PI-365142	cuttings
21366	Setaria sphacilata PI-365017	cuttings
21367	Stenotaphrum secundatum PI-365031	stolons
21368	Stenotaphrum secundatum PI-365032	stolons
21371	Urochloa mosambicensis PI-365074	stolons
21373	Urochloa mosambicensis PI-365076	stolons
21381	Urochloa mosambicensis PI-365084	stolons
21382	Urochloa mosambicensis PI-365085	stolons
21383	Urochloa mosambicensis PI-365086	stolons
21384	Urochloa mosambicensis PI-365087	stolons
21385	Urochloa mosambicensis PI-365088	stolons
21386	Vitex harveyana PI-365099	2 plants

National Plant Materials Center

Bulk Seed Shipments 1971

BN No.	Species	Amount
5688	Agropyron dasystachyum	5 lbs.
9063	Agropyron desertorum 'Nordan'	2 lbs.
5689	Agropyron inermis 'Whitmar'	5 lbs.
4616	Agropyron intermedium 'Greenar'	2 lbs.
6091	Agropyron intermedium 'Amur'	1 lb.
6103	Agropyron riparium 'Sodar'	2 lbs.
1623	Agropyron trichophorum 'Trigo'	4 lbs.
3838	Agropyron trichophorum 'Topar'	5 lbs.
9160	Agropyron trichophorum 'Luna'	2 lbs.
16207	Agropyron sibiricum 'P-27'	5 lbs.
9026	Ammophila breviligulata	2 lbs.
3380	Andropogon gerardi 'Kaw'	2 lbs.
8849	Andropogon halli 'Woodward'	2 lbs.
4496	Andropogon scoparius 'Aldous'	2 lbs.
1396	Astragalus cicer 'Cicer'	1 lb.
4495	Bothriochloa ischaemum 'El Kan'	2 lbs.
18593	Bouteloua eriopoda	1 lb.
1397	Bromus inermis 'Manchar'	1 lb.
8612	Bromus willdenowii	1 lb.
15861	Bromus willdenowii	1 lb.
21957	Castinopsis schlerophylla	10 lbs.
16161	Chamaecrista mohrii	1 lb.
11707	Coronilla varia 'Chemung'	1 lb.
8847	Dactylis glomerata 'Latar'	1 lb.
17958	Ehrharta calycina 'Mission veldt'	2 lbs.
2997	Festuca arundinacea 'Kentucky 31'	1 lb.
3512	Festuca arundinacea 'Alta'	1 lb.
15959	Festuca arundinacea 'Fawn'	2 lbs.
1400	Festuca ovina v. duriuscula 'Durar'	2½ lbs.
2279	Lespedeza bicolor 'Natob'	1 lb.
3532	Lespedeza thunbergii	1 lb.
8661	Lotus corniculatus 'Cascade'	1 lb.
19717	Lotus pedunculatus 'Marshfield'	2 lbs.
9141	Lotus tenuis 'Los Banos'	1 lb.
5225	Panicum coloratum 'Kleingrass 75'	30 lbs.
309	Panicum virgatum 'Blackwell'	2 lbs.
12323	Panicum virgatum 'Kanlow'	2 lbs.
3840	Poa ampla 'Sherman'	2½ lbs.
9090	Poa bulbosa	1 lb.
3490	Quercus acutissima	10½ lbs.
12122	Quercus myrsinaefolia	6 lbs.
15955	Robinia fertilis	1 lb.
12272	Sorghastrum nutans 'Osage'	2 lbs.
8392	Vicia dasycarpa 'Lana'	2 lbs.

National Plant Materials Center

1971 Seed Production

<u>Grasses</u>				
GENUS				Amount
Species	BN No.	PI No.	Original Source	of Seed
AGROPYRON				
cristatum	18818	330585	Iran	16 gm.
desertorum	19314	345583	U.S.S.R.	188 gm.
desertorum	19315	345584	U.S.S.R.	228 gm.
intermedium	19317	345586	U.S.S.R.	37.8 gm.
pectiniforme	15542	302993	Italy	57.5 gm.
pectiniforme	17594	315359	U.S.S.R.	19.1 gm.
sibiricum	18614	325184	U.S.S.R.	26.8 gm.
sibiricum	18726	326206	U.S.S.R.	276 gm.
ALOPECURUS				
arundinacea	17452	314355	U.S.S.R.	4 gm.
dasyanthus	12498	283175	U.S.S.R.	Trace
pratensis	18176	319815	Norway	7.2 gm.
pratensis	18619	325195	U.S.S.R.	5 gm.
pratensis	18732	326212	U.S.S.R.	40.5 gm.
ANDROPOGON				
scoparius	15991	213876	Rhode Island	62 gm.
scoparius	19834	216747	Texas	94 gm.
scoparius	19835	216748	Texas	110 gm.
scoparius	19837	216754	Texas	65 gm.
ANTHOXANTHUM				
odoratum	--	--	NPMC (1966 Seed)	800 gm.
AXONOPUS				
micay	20390	365630	Columbia	Trace
BOTHRIOCHLOA				
glabra	19176	209168	South Africa	450 gm.
glabra	19921	208915	South Africa	4.7 gm.
glabra	19931	240833	Australia	92 gm.
glabra	19932	241496	New Guinea	27 gm.
glabra	19935	266194	South Africa	34 gm.
insculpta	19922	209355	South Africa	2 gm.
intermedia	19925	216701	Texas	13.5 gm.
intermedia	19934	245728	Turkey	Trace
intermedia	19935	253335	Morocco	10.5 gm.
intermedia v. montana	19085	--	Oklahoma State Univ.	49.5 gm.
ischaemum	18625	325212	U.S.S.R.	31.5 gm.
ischaemum	18831	330698	Iran	30 gm.

1971 Seed Production - Grasses

GENUS Species	BN No.	PI No.	Original Source	Amount of Seed
BOTHRIOCHLOA				
ischaemum	19917	173636	Turkey	33 gm.
ischaemum	19918	174040	Turkey	35.5 gm.
ischaemum	19920	176409	Oklahoma	Trace
ischaemum	19933	245727	Turkey	18.5 gm.
ischaemum v. songarica	19919	174042	Turkey	114 gm.
ischaemum v. songarica	19926	218060	Pakistan	10.5 gm.
BRACHYPODIUM				
pinnatum	9156	--	Greece	22 gm.
pinnatum	18628	325215	U.S.S.R.	25.1 gm.
pinnatum	18629	325216	U.S.S.R.	9.5 gm.
sylvaticum	19271	344569	Czechoslovakia	57 gm.
BROMUS				
biebersteinii	19160	341222	Canada	411 gm.
biebersteinii	19161	341223	Canada	341.5 gm.
erectus	9841	253301	Yugoslavia	7.5 gm.
inermis	13762	--	Virginia	52 gm.
inermis	18738	326262	U.S.S.R.	Trace
inermis	18739	326263	U.S.S.R.	18 gm.
inermis	19166	341228	Canada	Trace
inermis	19369	345966	Norway	12.5 gm.
inermis x tytholepis	19159	341221	Canada	382 gm.
stamineus	9682	251107	Yugoslavia	39 gm.
willdenowii	19370	345967	Madeira	320 gm.
sp.	19272	344570	Czechoslovakia	426 gm.
CALAMAGROSTIS				
arundinacea	18635	325239	U.S.S.R.	27.3 gm.
CENCHRUS				
ciliaris	19379	345976	Madeira via Norway	5 gm.
CHRYSOPOGON				
gryllus	6219	185145	Iraq	37.3 gm.
DACTYLIS				
glomerata	18646	325301	U.S.S.R.	1.5 gm.
glomerata	18647	325302	U.S.S.R.	4.5 gm.
glomerata	18649	325307	U.S.S.R.	5 gm.
DIGITARIA				
valida	21198	364678	South Africa	2.5 gm.

1971 Seed Production - Grasses

GENUS Species	BN No.	PI No.	Original Source	Amount of Seed
ELYMUS				
junceus	17350	314082	U.S.S.R.	Trace
sibiricus	18743	326267	U.S.S.R.	4.5 gm.
ERAGROSTIS				
chloromelas	19015	338640	Morocco	11 gm.
curvula	19016	338641	Morocco	29.5 gm.
ferraginea	12589	283273	Japan	88 gm.
FESTUCA				
arundinacea	17562	314685	U.S.S.R.	53 gm.
longifolia	19283	344581	Czechoslovakia	107 gm.
ovina	10509	257740	Hungary	41.5 gm.
ovina	17663	315448	U.S.S.R.	121 gm.
ovina	19385	345982	Norway	2 gm.
sulcata	17355	314087	U.S.S.R.	32 gm.
sulcata	17477	314437	U.S.S.R.	36 gm.
LOLIUM				
perenne	15573	303042	Netherlands	14.8 gm.
MELICA				
altissima	18668	325417	U.S.S.R.	Trace
altissima	18669	325418	U.S.S.R.	140 gm.
cupanii	18837	330710	Iran	Trace
taurica	18670	325419	U.S.S.R.	287.5 gm.
ORYZOPSIS				
aequiglumis	11665	271588	India	3 gm.
coerulescens	16148	306624	Israel	Trace
PANICUM				
antidotale	12247	213272	India	15.8 gm.
antidotale	19028	338654	Morocco	9 gm.
antidotale	20210	269944	West Pakistan	55.8 gm.
antidotale	20211	308603	Italy	20 gm.
clandestinum	18572	--	Tennessee	104 gm.
virgatum v. cubense	10997	--	North Carolina	15 gm.
PASPALUM				
nicorae	16701	310134	Brazil	57.2 gm.
notatum	19714	354896	Columbia	Trace
scrobiculatum	19619	349653	India	153 gm.
sp.	19582	348931	New Guinea	19.5 gm.

1971 Seed Production - Grasses

GENUS Species	BN No.	PI No.	Original Source	Amount of Seed
PENNISETUM				
dichotomum	19416	346013	Norway	54 gm.
macrostachyum	20407	354276	New Guinea	14 gm.
orientale	18844	330717	Iran	30 gm.
pedicellatum	11581	271146	India	11.5 gm.
PHALARIS				
aquatica	13170	284219	Spain	Trace
aquatica	13176	284225	South Africa	28.5 gm.
arundinacea	17330	--	Ohio via Florida PMC	276 gm.
arundinacea	18186	319825	Norway	Trace
arundinacea	19260	344557	Czechoslovakia	34.5 gm.
arundinacea	19321	345662	U.S.S.R.	71 gm.
sp.	13908	289670	Spain	8.8 gm.
PHLEUM				
pratense	19419	346016	Norway	15 gm.
POA				
bulbosa	17129	312469	U.S.S.R.	26.5 gm.
bulbosa	17391	314163	U.S.S.R.	71 gm.
pratensis	18788	330632	Poland	120 gm.
ROTTBOELLIA				
exalta	19584	348933	New Guinea	33.5 gm.
SETARIA				
chondrachne	13634	286487	Japan	Trace
palmifolia	20408	354405	New Guinea	1.5 gm.
rariflora	7243	196204	Venezuela	23.5 gm.
splendida	17932	316469	Fiji Islands	207 gm.
verticillata	19436	346033	Norway	235 gm.
sp.	18266	--	Korea	156 gm.
SORGHASTRUM				
nutans	14671	--	Mississippi PMC	3 gm.
SORGHUM				
hybrid	15344	--	Agri. Marketing Service	206 gm.
SPOROBOLUS				
australasicus	10572	257803	Australia	Trace

National Plant Materials Center

1971 Seed Production

Legumes and Other

GENUS				Amount of
- Species	BN No.	PI No.	Original Source	Seed
ADESMIA				
microphylla	13513	285109	Chile	Trace
ALYSICARPUS				
vaginalis	18279	322296	Brazil	Trace
ALYSSUM				
montanum	19252	344559	Czechoslovakia	66 gm.
murale	18106	--	Hungary	4.5 gm.
murale ssp.				
transylvania	18101	--	Hungary	7 gm.
ASTRAGALUS				
asper	17339	314059	U.S.S.R.	2 gm.
cicer	18621	325205	U.S.S.R.	2.5 gm.
glycyphyllos	2588	123442	France	Trace
glycyphyllos	7886	246728	Spain	10 gm.
glycyphyllos	18622	325207	U.S.S.R.	251 gm.
glycyphyllos	19268	344565	Czechoslovakia	28.5 gm.
CORONILLA				
varia	19275	344573	Czechoslovakia	6.5 gm.
ERINUS				
alpinus	19242	--	New York	16.5 gm.
EUONYMOUS				
alatus	19721	--	Laurel, Maryland	106 gm.
GAILLARDIA				
sp.	19639	--	North Carolina	Trace
HYPERICUM				
hirsutum	19394	345991	Norway	Trace
perforatum	19397	345994	Norway	Trace
rhodopaeum	19287	344585	Czechoslovakia	Trace
LATHYRUS				
aphaca	19346	369351	Turkey	45.5 gm.
erectus	19347	369352	Turkey	8.5 gm.
tingitanus	19407	346004	Norway	105 gm.
sp.	14051	221514	Afghanistan	7.3 gm.
sp.	19232	--	California	14.5 gm.
LESPEDEZA				
bicolor	2279	--	China via Morton Arb.	18 lbs.

1971 Seed Production - Legumes and Other

GENUS Species	BN No.	PI No.	Original Source	Amount of Seed
LOTUS				
caucasicus	18659	325369	U.S.S.R.	3.5 gm.
caucasicus	18660	325370	U.S.S.R.	3 gm.
caucasicus	18661	325371	U.S.S.R.	Trace
caucasicus	18662	325372	U.S.S.R.	Trace
caucasicus	18663	325373	U.S.S.R.	62 gm.
caucasicus	18664	325374	U.S.S.R.	56.5 gm.
caucasicus	18666	325376	U.S.S.R.	107.5 gm.
caucasicus	18667	325377	U.S.S.R.	Trace
conjugatus	12824	283617	Hungary	26.5 gm.
corniculatus	5489	--	SCN, Winona, Minnesota	Trace
corniculatus	13550	--	Allegany Co., Maryland	136 gm.
corniculatus	18183	319822	Norway	Trace
corniculatus	18447	322556	Brazil	4.5 gm.
MEDICAGO				
orbiculatus	19411	346008	Norway	76 gm.
turbinata	19412	346009	Norway	74.5 gm.
MELILOTUS				
hirsuta	18762	325421	U.S.S.R.	9.5 gm.
indica	19413	346010	Madeira via Norway	1.5 gm.
officinalis	18673	325422	U.S.S.R.	Trace
officinalis	18674	325423	U.S.S.R.	Trace
officinalis	18707	325424	U.S.S.R.	5.7 gm.
officinalis	18709	325426	U.S.S.R.	5 gm.
officinalis	18710	325427	U.S.S.R.	Trace
taurica	18675	325428	U.S.S.R.	11 gm.
taurica	18677	325430	U.S.S.R.	35.5 gm.
RESEDA				
alba	19566	348874	Belgium	Trace
SANGUISORBA				
minor ssp.				
magnoli	19430	346028	Norway	20.5 gm.
tenuifolia	19433	346030	Norway	Trace
SEDUM				
aizoon	14568	292815	Sweden	3.5 gm.
ellacombianum	15080	297374	Norway	7 gm.
rupestre v.				
fosterianum	12913	--	Monkton, Maryland	11 gm.
spurium				
coccineum	10885	--	Michigan	Trace

1971 Seed Production - Legumes and Other

GENUS				Amount of
Species	BN No.	PI No.	Original Source	Seed
TAGETES				
erecta	19658	350689	Netherlands	72.5 gm.
erecta	19659	350690	Netherlands	70.7 gm.
erecta	19660	350691	Netherlands	43.5 gm.
erecta	19661	350692	Netherlands	127 gm.
minuta	19663	350694	Netherlands	19 gm.
patula	19664	350695	Netherlands	83.5 gm.
patula	19665	350696	Netherlands	170 gm.
patula	19666	350697	Netherlands	4 gm.
patula	19667	350698	Netherlands	22 gm.
tenuifolia	19669	350700	Netherlands	Trace
TETRACHNE				
dregii	19203	330683	Israel	42.3 gm.
TRIFOLIUM				
ambiguum	4529	--	Canada	Trace
campestre	19440	346037	Maderia via Norway	25.5 gm.
diffusum	16306	--	University of Kentucky	Trace
elongatum	14731	253200	Yugoslavia	14.5 gm.
hirtum	9465	120079-	Turkey	62.5 gm.
		Q-39		
hirtum	9471	120122-	Turkey	76 gm.
		Q-39		
hirtum	9480	120130-	Turkey	70 gm.
		Q-39		
hirtum	9481	120130-	Turkey	52 gm.
		A-Q-39		
hirtum	9486	120137-	Turkey	60.5 gm.
		Q-39		
hirtum	9491	120146-	Turkey	40 gm.
		Q-39		
hirtum	9504	120162	Turkey	22.5 gm.
hirtum	9518	120179-	Turkey	57 gm.
		Q-39		
hirtum	9521	120188	Turkey	60 gm.
hirtum	9529	120198-	NPMC	59.5 gm.
		Q-39		
hirtum	9565	120248	Turkey	82 gm.
hirtum	9568	121232-	Turkey	44 gm.
		Q-39		
hirtum	9569	121232-	Turkey	55 gm.
		B-Q-39		
hirtum	9582	121247-	Turkey	71.5 gm.
		A-Q-39		

1971 Seed Production - Legumes and Other

GENUS				Amount
Species	BN No.	PI No.	Original Source	of Seed
TRIFOLIUM				
incarnatum	6073	--	SCN, Thorsby, Alabama	Trace
incarnatum	13233	284282	Hungary	15 gm.
incarnatum	13997	290734	Great Britain	Trace
incarnatum	19443	346040	Norway	Trace
lupinaster	19444	346041	Norway	Trace
palaestinum	8533	233279	Israel	7.5 gm.
pilulare	8534	232280	Israel	12.5 gm.
pilulare	8534	233280	Israel	29 gm.
pratense	19449	346046	Norway	Trace
repens	17035	311495	Spain	3.5 gm.
repens	19450	346047	Norway	Trace
resupinatum	19451	346048	Norway	23.5 gm.
rubens	17380	314123	U.S.S.R.	4 gm.
rueppelianum	10854	262237	Kenya, East Africa	Trace
rueppelianum	18144	319491	Tanzania	Trace
stellatum	19452	346049	France	24 gm.
stellatum	19453	346050	Madeira	33.5 gm.
uniflorum	19585	330361	Turkey	Trace
sp.	16286	234411	Kenya, East Africa	10.5 gm.
sp.	19439	--	Turkey	4 gm.
VERONICA				
incana	19460	346057	Norway	11.5 gm.
longifolia	19461	346058	Norway	Trace
teucrium	14590	292837	Sweden	Trace
VICIA				
amurensis	18953	--	U.S.S.R.	8.5 gm.
assyriaca	19239	369354	Peoria, Illinois	Trace
canescens	19330	--	Turkey	Trace
dasycarpa	19333	--	Peoria, Illinois	38 gm.
dumetorum	16423	308101	Czechoslovakia	3.5 gm.
grandiflora	19742	351081	France	22.5 gm.
grandiflora v. kitaibeliana	19743	351082	France	52.5 gm.
noeana	19337	--	Turkey	9.5 gm.
noeana	19338	--	Turkey	18 gm.
peregrina	19341	--	Turkey	32 gm.
pisiformis	17381	314124	U.S.S.R.	51.5 gm.
sativa	19342	--	Turkey	47 gm.
sativa	19343	--	Spain	82.5 gm.
sativa x cordata	19650	--	Auburn Univ., Alabama	137.5 gm.
tetrasperma	17700	--	NPMC	24 gm.

1971 Seed Production - Legumes and Other

GENUS				Amount
Species	BN No.	PI No.	Original Source	of Seed
VICIA				
unijuga	18965	344758	Belgium	Trace
variegata	18966	--	U.S.S.R.	Trace
villosa	14175	250796	Afghanistan	15.5 gm.
villosa	19348	369356	Turkey	23 gm.
sp.	14181	220058	Iran	19.5 gm.
sp.	17909	314504	U.S.S.R.	116 gm.
sp.	17911	314767	U.S.S.R.	Trace
sp.	17912	317185	U.S.S.R.	65 gm.
sp.	19209	--	Hungary	13.5 gm.
sp.	19687	--	Florida	126 gm.

KEY TO SYMBOLS IN TABLES AND IN NOTES AND COMMENTS

PI	Stems			Spring Recovery			Leaves		
Number	Number	Thickness	Habit	Time	Amount	Number	Texture	Location	
	A-abund.	C-coarse	E-erect	E-early	A-abund.	A-abund.	C-coarse	B-basal	
	M-mod.	M-med.	SE-sub-erect	L-late	M-medium	M-mod.	M-medium	C-cauline	
	F-few	F-fine	P-prostrate		S-sparse	F-few	S-soft	WD-well distributed	

Size at Maturity - Grasses:			
Stem Height - Leaf Height x Plant Width			
Size at Maturity - Legumes and Others:			
Plant Height x Plant Width			

Vigor	Leaf spot	Bloom	Maturity
E-excellent	L-light	Month	Month
G-good	M-medium		
F-fair	S-severe		
P-poor			

Density	Rating and Notes
VD-very dense	Self explanatory
D-dense	
M-moderate	

